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Washington, Wednesday, September 27, 1950

TITLE 3—THE PRESIDENT

EXECUTIVE ORDER 10163

THE ARMED FORCES RESERVE MEDAL

By virtue of the authority vested in me as President of the United States and as Commander in Chief of the armed forces of the United States, it is hereby ordered as follows:

1. There is hereby established the Armed Forces Reserve Medal, with accompanying appurtenances and devices, for award to members and former members of the reserve components of the armed forces of the United States as hereinafter provided.

2. The Armed Forces Reserve Medal shall be of such design as the Secretary of Defense shall approve: *Provided*, That the obverse face of the medal shall be of the same design in all cases, and the reverse face shall be distinctive in design with respect to each reserve component of the armed forces of the United States, including the Coast Guard Reserve and the Marine Corps Reserve: *And provided further*, That the reverse face of the medal to be awarded to members of the Coast Guard Reserve shall be of such design as the Secretary of the Treasury shall approve.

3. The Armed Forces Reserve Medal may be awarded to members or former members of the reserve components of the armed forces of the United States, including the Coast Guard Reserve and the Marine Corps Reserve, who complete, or have completed, a total of ten years of honorable service in one or more of such reserve components, including annual active-duty and inactive-duty training as required by appropriate regulations: *Provided*, (1) That such ten years of service is, or has been, performed within a period of twelve consecutive years, (2) that any medal awarded hereunder shall be of the design distinctive of the reserve component in which the person to whom it is awarded is serving at the time of the award or in which he last served, (3) that such service shall not include service in a regular component of the armed forces, including the Coast Guard, and (4) that such service shall not include service for which the Naval Reserve Medal or the Marine Corps Reserve Medal has been, or may be, awarded.

4. Not more than one Armed Forces Reserve Medal may be awarded to any one person, but for each succeeding ten-year period of service as above described a suitable device may be awarded, to be worn with the medal in accordance with appropriate regulations.

5. A member of a Naval or Marine Corps Reserve component who is eligible to receive a Naval Reserve or Marine Corps Reserve Medal may at his election be awarded, in lieu of such medal, the Armed Forces Reserve Medal.

6. The Armed Forces Reserve Medal shall be awarded in lieu of the Naval Reserve and the Marine Corps Reserve Medals for service performed after twenty years from the dates on which such medals were established.

7. Subject to the provisions of this order, the Armed Forces Reserve Medal shall be awarded under such regulations as the Secretaries of the military departments of the Department of Defense and the Secretary of the Treasury shall severally prescribe. Such regulations shall, so far as practicable, be of uniform application, and regulations issued pursuant to this order by the Secretaries of the military departments of the Department of Defense shall be subject to the approval of the Secretary of Defense.

HARRY S. TRUMAN

THE WHITE HOUSE,
September 25, 1950.

[F. R. Doc. 50-8479; Filed, Sept. 25, 1950; 3:05 p. m.]

TITLE 7—AGRICULTURE

Chapter II—Production and Marketing Administration (School Lunch Program), Department of Agriculture

APPENDIX—APPORTIONMENT OF ASSISTANCE FUNDS

APPORTIONMENT OF FOOD ASSISTANCE FUNDS PURSUANT TO NATIONAL SCHOOL LUNCH ACT FISCAL YEAR 1951

Pursuant to section 4 of the National School Lunch Act (60 Stat. 230) food assistance funds available for the fiscal year ending June 30, 1951, are apportioned among the States as follows:

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FEDERAL REGISTER

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State	Total	State Agency	Withheld for private schools
Alabama	$2,305,118	$2,250,674	$54,444
Arizona	384,448	363,657	20,791
Arkansas	1,557,877	1,530,107	27,770
California	2,922,547	2,922,547	
Colorado	475,988	434,489	41,499
Connecticut	554,844	554,844	
Delaware	88,515	74,262	14,253
District of Columbia	202,691	202,691	
Florida	1,161,420	1,119,288	42,132
Georgia	2,235,599	2,235,599	
Idaho	284,379	276,026	8,353
Illinois	2,222,685	2,222,685	
Indiana	1,497,999	1,497,999	
Iowa	899,920	808,127	91,793
Kansas	765,617	765,617	
Kentucky	2,089,947	2,089,947	
Louisiana	1,667,922	1,667,922	
Maine	425,038	350,692	74,346
Maryland	711,510	585,250	126,260
Massachusetts	1,493,129	1,146,069	347,060
Michigan	2,320,387	1,967,491	352,896
Minnesota	1,174,348	1,011,724	162,624
Mississippi	2,047,084	2,047,084	
Missouri	1,508,764	1,508,764	
Montana	175,054	159,549	15,505
Nebraska	468,987	421,472	47,515
Nevada	44,310	43,681	629
New Hampshire	212,811	212,811	
New Jersey	1,362,428	1,104,608	257,820
New Mexico	373,161	373,161	
New York	3,473,365	3,473,365	
North Carolina	2,834,138	2,834,138	
North Dakota	257,947	233,406	24,541
Ohio	2,596,920	2,243,511	353,409
Oklahoma	1,378,853	1,378,853	
Oregon	608,130	608,130	
Pennsylvania	3,812,522	3,144,509	668,013
Rhode Island	227,645	227,645	
South Carolina	1,701,715	1,680,728	20,987
South Dakota	235,876	216,490	19,386
Tennessee	2,145,078	2,093,165	51,913
Texas	3,706,887	3,706,887	
Utah	362,613	357,605	5,008
Vermont	170,793	170,793	
Virginia	1,595,583	1,546,437	49,146
Washington	850,317	801,385	48,932
West Virginia	1,170,204	1,144,594	25,610
Wisconsin	1,248,401	986,292	262,109
Wyoming	108,486	108,486	
Subtotal	62,120,000	58,905,256	3,214,744
Alaska	10,551	10,551	
Hawaii	73,320	57,521	15,799
Puerto Rico	2,377,490	2,377,490	
Virgin Islands	43,639	43,639	
Subtotal	2,505,000	2,489,201	15,799
Total	64,625,000	61,394,457	3,230,543

(60 Stat. 230–233; 42 U. S. C. 1751–1760)

Dated: September 21, 1950.

[SEAL] C. J. McCORMICK,
Acting Secretary of Agriculture.

[F. R. Doc. 50-8422; Filed, Sept. 26, 1950; 8:45 a. m.]

Chapter VIII—Production and Marketing Administration (Sugar Branch), Department of Agriculture

Subchapter F—Determination of Normal Yields and Eligibility for Abandonment and Crop Deficiency Payments

[Sugar Determination 847.2]

PART 847—PUERTO RICO

1950-51 AND SUBSEQUENT CROPS

Pursuant to the provisions of section 303 of the Sugar Act of 1948, the following determination is hereby issued:

§ 847.2 *Normal yields and eligibility for abandonment and crop deficiency payments.*—(a) *Farm normal yields.* The normal yield of commercially recoverable sugar per acre for any sugarcane farm in Puerto Rico shall be established

for the 1950–51 and each subsequent crop year as follows:

(1) For a farm on which sugarcane was grown and marketed (or processed by the producer) for the extraction of sugar in three or more crop years of the base period, as defined in paragraph (c) of this section, the normal yield shall be the simple average of the annual average yields of sugar per acre of sugarcane harvested from the farm for the extraction of sugar for all of such years in which sugarcane was harvested.

(2) For a farm on which sugarcane was grown and marketed (or processed by the producer) for the extraction of sugar in less than three crop years of the base period, the normal yield shall be the simple average of the normal yields per acre which are computed pursuant to subparagraph (1) of this paragraph for all other farms within the same local producing area.

(b) *Eligibility for abandonment and deficiency payments.* The Director of the Caribbean Area office of the Production and Marketing Administration (hereinafter referred to as "Director") or a representative as may be designated by the Director, shall approve for abandonment and/or deficiency payments any farm located in whole or in part in a local producing area in which the actual yields of sugar from 10 percent or more of the sugarcane acreage harvested on all farms or parts of other farms located in such local producing area, were not in excess of 80 percent of the applicable normal yields: *Provided*, That (1) such acreage abandonment and/or crop deficiency was directly due to drought, flood, storm, freeze, disease or insects, (2) the acreage abandoned and/or the acreage with respect to which there was a crop deficiency was suitable for the production of sugarcane and was cared for up to the time of harvest or abandonment, as the case may be, in a manner which could have been expected under average conditions to produce a normal crop of sugarcane, and (3) the other conditions for payment specified in Title III of the act with respect to the farm have been met. Such approval on the application for payment by the Director or a designated representative of the Director, shall constitute determination that such farm is eligible for abandonment and/or deficiency payments.

(c) *Definitions.* (1) "Sugar" shall mean hundredweight of sugar commercially recoverable from the sugarcane grown on the farm and marketed (or processed) for the extraction of sugar.

(2) For the 1950–51 crop year, the "base period" shall mean the crop years 1946–47 through 1949–50, and for the 1951–52 and each subsequent crop year, it shall mean the next preceding five crop years.

(3) Acreage of sugarcane "harvested" shall mean the acreage from which sugarcane was harvested for the extraction of sugar plus the acreage of sugarcane with respect to which there was bona fide abandonment as a result of drought, flood, storm, freeze, disease or insects.

(4) "Local producing area" shall mean all nearby farms or parts of farms which are similar with respect to types of soil or with respect to topography, as determined by the Director: *Provided, however*, That farms or parts of farms separated from other farms or parts of farms by any natural barrier or large area of land shall not be included within the same local producting area.

This determination supersedes, with respect to the 1950–51 and subsequent crop years, the "Determination of Normal Yields of Commercially Recoverable Sugar per Acre and Eligibility for Payment with Respect to Abandonment and Crop Deficiency for Sugarcane Farms in Puerto Rico (Revised)", issued March 17, 1948 (13 F. R. 1505–1506).

STATEMENT OF BASES AND CONSIDERATIONS

Requirements of the Sugar Act of 1948. Section 303 of the act authorizes the Secretary to make payments to producers of sugar beets or sugarcane with respect to bona fide abandonment of planted acreage and crop deficiencies of harvested acreage under certain conditons. The payments are based on normal yields of commercially recoverable sugar per acre as established for individual farms under determinations issued by the Secretary.

Historical background. Normal yields for farms in Puerto Rico have been based heretofore on the average yields of commercially recoverable sugar per acre obtained during base periods consisting of three crop years deemed to be representative of the yields to be expected under normal conditions. For the crop years 1937–38 through 1941–42, the base period consisted of the crop years 1934–35, 1935–36, and 1936–37. For the crop years 1942–43 through 1946–47, the base period included the crop years 1938–39, 1939–40 and 1940–41. Beginning with the 1947–48 crop, the base period comprised the years 1941–42, 1944–45 and 1946–47. The average yields per acre in Puerto Rico for these base periods were 63.4, 80.0, and 69.9 cwt., respectively.

Base periods. The use of fixed base periods covering selected crop years does not adequately reflect changes in yields. This is indicated by the significant variations in the average yields for the former base periods as shown above. It also tends to benefit those producers who obtained abnormally high yields in the selected base years, while the effect is the reverse with respect to those producers who obtained subnormal yields in those years. It is believed that the use of moving base periods will reflect current changes more adequately, will assure equitable treatment among all producers, and will provide a sounder basis for the computation of any acreage abandonment or crop deficiency payments which may be applied for in the future. For the 1950–51 crop year, the base period will consists of the next preceding four crop years because the 1945–46 crop was affected by conditions resulting from the war and by adverse weather. The average yield per acre obtained in Puerto Rico for this base period will approximate 70.0 hundredweight of sugar. Beginning with the 1951–52 crop year, the base period will cover the next preceding five crop years, since the data will be readily available and the longer period is deemed more appropriate for continued use. Moving base periods have been used continually for this purpose in the sugar beet area and have been adopted recently for both the Mainland sugarcane area and Hawaii.

Eligibility for abandonment and deficiency payments. The provisions regarding eligibility for these payments have been in effect for several years and have proven to be generally satisfactory. Minor changes have been made to give recognition to the location and production of parts of farms in determining eligibility for such payments. Except for these changes, the provisions are the same as those which were in effect last year. Accordingly, I hereby find and conclude that the foregoing determination will effectuate the provisions of section 303 of the Sugar Act of 1948.

(Sec. 403, 61 Stat. 932; 7 U. S. C. Sup., 1153. Interprets or applies Sec. 303, 61 Stat. 930; 7 U. S. C. Sup., 1133)

Issued this 21st day of September 1950.

[SEAL] C. J. McCORMICK,
Acting Secretary of Agriculture.

[F. R. Doc. 50–8423; Filed, Sept. 26, 1950; 8:46 a. m.]

TITLE 19—CUSTOMS DUTIES

Chapter I—Bureau of Customs, Department of the Treasury

[T. D. 52563]

PART 24—CUSTOMS FINANCIAL AND ACCOUNTING PROCEDURE

REIMBURSABLE SERVICES

Section 24.17 (a), Customs Regulations of 1943 (19 CFR 24.17 (a)), is hereby amended by inserting a new subparagraph (8) reading as follows:

(8) When a customs officer or employee [5aa] is assigned under authority of section 562, Tariff Act of 1930, as amended, to supervise the manipulation of merchandise at a place other than a bonded warehouse, the compensation and expenses of such officer or employee shall be reimbursed to the Government by the party in interest.

[5aa] A customs officer or employee so assigned is not acting as a storekeeper, since the services have no connection with a customs bonded warehouse.

(R. S. 161, 251, sec. 624, 46 Stat. 759; 5 U. S. C. 22, 19 U. S. C. 66, 1624. Interprets or applies sec. 562, 46 Stat. 745, as amended; 19 U. S. C. 1562)

This amendment shall become effective October 1, 1950.

[SEAL] FRANK DOW,
Commissioner of Customs.

Approved: September 20, 1950.

JOHN S. GRAHAM,
Acting Secretary of the Treasury.

[F. R. Doc. 50–8415; Filed, Sept. 26, 1950; 8:45 a. m.]

TITLE 22—FOREIGN RELATIONS

Chapter II—Economic Cooperation Administration

[ECA Reg. 1, Rev. Amdt. 5]

PART 201—PROCEDURE FOR FURNISHING ASSISTANCE TO PARTICIPATING COUNTRIES

PETROLEUM PRODUCTS

Amendment 5 to ECA Regulation 1 (F. R. Doc. 50-7387, 15 F. R. 5690) is amended to read as follows:

ECA Regulation 1 is amended in the following respect:

Section 201.22 (d) (4) is amended by adding the following:

(i) *Petroleum products.* (*a*) Purchases from any source: A price for a purchase of a petroleum product from any source will not be approved for reimbursement if it results in a delivered cost to the participating country which is in excess of the lowest prevailing delivered cost, on the date the purchase price is fixed, for a comparable export sale of the same or similar commodity to such participating country from any alternative source of supply from which the commodity is available for export in sufficient quantity.

(*b*) Purchases from sources other than the United States: A price for a purchase of a petroleum product from sources other than the United States will be approved for reimbursement if it complies with the requirements of paragraph (e) (2) of this section, and does not exceed the lowest competitive market price in the United States for a comparable export sale of the same or a similar commodity on the date the purchase price is fixed.

Provided, That a price for a purchase of a petroluem product from the Middle East may not exceed the United States price referred to above less $3.50 per long ton for loadings from Arabian ports or from Bahrein Island; $4.00 per long ton for loadings from Kuwait ports; or $4.20 per long ton for loadings from Iranian ports; *Provided further,* That the price shall be further reduced in the amounts specified below for shipments to the following destinations:

Group	Ports of destination	Additional reductions per long ton
1	Including and between Bordeaux, Hamburg, and the United Kingdom	$0.85
2	Sweden	1.15
3	Denmark	1.25
4	Norway	1.35

(*c*) For the purposes of this subdivision, a sale for export from the Middle East to any port of destination described in subdivision (*b*) of this subdivision shall not be deemed a "comparable sale" within the meaning of paragraph (b) (2) of this section to (*1*) a sale for export from the Middle East to any other port of destination in any other group described in subdivision (*b*) of this subdivision, or (*2*) any other destination other than the United States.

(*d*) For purposes of this subdivision "price" shall mean the realized f. o. b. price or realized netback.

Transitory provision. This amendment to ECA Regulation 1 will take effect on October 1, 1950, but will not be applicable to claims for reimbursement for payments made to a supplier pursuant to letters of credit issued, confirmed or advised, or payment instructions received, prior to September 15, 1950.

(Sec. 104, 62 Stat. 138, as amended; 22 U. S. C. Sup., 1503. Interprets or applies secs. 111, 403, 62 Stat. 143, 159; 22 U. S. C. Sup., 1509, 1542)

WILLIAM FOSTER,
Acting Administrator for Economic Cooperation.

[F. R. Doc. 50-8434; Filed, Sept. 26, 1950; 8:49 a. m.]

TITLE 44—PUBLIC PROPERTY AND WORKS

Chapter I—General Services Administration

Subchapter B—Personal Property Management

PART 55—PERSONAL PROPERTY DISPOSAL

The title of this part is redesignated as shown, the part is revised to read as follows, and General Services Administration Temporary Regulation 2 (14 F. R. 3694, as amended, 15 F. R. 2856, 3072, 4459) and General Services Administration Temporary Regulation 6 (14 F. R. 5727) are repealed.

Sec.

55.1 Purpose and scope.

SUBPART A—DEFINITIONS

55.2 Terms defined in the act.

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AUTHORITY: §§ 55.1 to 55.63 issued under sec. 205, Pub. Law 152, 81st Cong.; 41 U. S. C. Sup. 235. Interpret or apply sec. 203, Pub. Law 152, 81st Cong.; 41 U. S. C. Sup. 233.

§ 55.1 *Purpose and scope.* The regulations in this part prescribe the policies and methods governing the disposal, including donation, of surplus personal property located within the continental United States, Hawaii, Alaska, Puerto Rico and the Virgin Islands.

SUBPART A—DEFINITIONS

§ 55.2 *Terms defined in the act.* Terms not defined in §§ 55.3 through 55.63 which are defined in the Federal Property and Administrative Services Act of 1949 (Pub. Law 152, 81st Cong.; 41 U. S. C. Sup. 201-274, referred to in this part as the "act") shall in this part have the meaning given to them in the act.

OTHER TERMS

§ 55.3 *Administration.* "Administration" means the General Services Administration acting by or through the Administrator of General Services or a designated official to whom functions under the regulations in this part have been delegated by the Administrator.

§ 55.4 *Administrator.* "Administrator" means the Administrator of General Services.

§ 55.5 *Donable property.* "Donable property" means surplus equipment, materials, books, or other supplies, under the control of any executive agency, except: (a) such property as may be specified from time to time by the Administrator, (b) property which, by other law, is precluded from donation under the regulations in this part, and (c) property which was acquired by the use of funds either not appropriated from the general fund of the Treasury or appropriated therefrom but by law reimbursable from assessment, tax, or other revenue or receipts, unless the holding agency deems it uneconomical or impracticable to dispose of the property other than by donation.

§ 55.6 *Educational institution.* "Educational institution" means any tax-supported school system, school, college, and university, any other non-profit school, college, and university which has been held exempt from taxation under section 101 (6) of the Internal Revenue Code and any State department of education or other State agency designated by State law to receive property for and distribute it to such tax-supported and non-profit school systems, schools, colleges, and universities within the State.

§ 55.7 *Excess.* "Excess" when used with respect to personal property means any such property under the control of

any Federal agency which is not required for its needs and the discharge of its responsibilities, as determined by the head thereof.

§ 55.8 *Executive agency.* "Executive agency" means, notwithstanding § 51.1 of this chapter, any executive department or independent establishment in the executive branch of the Government, including any wholly owned Government corporation.

§ 55.9 *Federal agency.* "Federal agency" means any executive agency or any establishment in the legislative or judicial branch of the Government (except the Senate and the House of Representatives).

§ 55.10 *Holding agency.* "Holding agency" means the executive agency which has accountability for the property involved.

§ 55.11 *Personal property.* "Personal property" means property of any kind or any interest therein, except real property and naval vessels of the following categories: battleships, cruisers, aircraft carriers, destroyers and submarines.

§ 55.12 *Real property.* "Real property" means (a) any interest in land (except the public domain and lands reserved or dedicated for national forest or national park purposes) owned by the United States, including any wholly owned Government corporation, and any fixtures, appurtenances, and improvements of any kind located thereon; (b) any fixtures, structures and other improvements (excluding standing timber and crops) owned by the United States; and (c) any fixtures, structures and other improvements owned by the United States which are located on the public domain and lands reserved or dedicated for national forest or national park purposes or located on land that is not owned by the United States.

§ 55.13 *Reviewing authority.* "Reviewing authority" means a local, regional, or departmental board of review of a holding agency. It may consist of one or more persons.

§ 55.14 *Service educational activity.* "Service educational activity" means any educational activity designated by the Secretary of Defense as being of special interest to the Armed Services, such as maritime academies or military, naval, Air Force or Coast Guard preparatory schools.

§ 55.15 *Small business.* "Small business" means any concern whose aggregate number of employees, including its affiliates, is less than five hundred.

§ 55.16 *Surplus.* "Surplus" when used with respect to any personal property means any excess personal property not required for the needs and the discharge of the responsibilities of all Federal agencies, as determined by the Administration.

Subpart B—Basic Policies

§ 55.21 *Economy.* It is the policy of the Administrator that surplus personal property shall be disposed of in the most economical manner consistent with the best interests of the Government.

§ 55.22 *Other objectives.* It is the policy of the Administrator that surplus personal property shall be disposed of promptly and in such a manner as to:

(a) Facilitate production for national defense requirements;

(b) Encourage and foster employment opportunities;

(c) Strengthen and preserve the competitive position of small business;

(d) Foster the development of new independent enterprises;

(e) Discourage monopoly, speculation and restraint of trade;

(f) Strengthen and encourage the development and expansion of the education program.

Subpart C—Disposal by Donation

§ 55.31 *Scope.* This subpart implements section 203 (j) of the act, providing for the donation of certain surplus property to educational institutions and service educational activities. It does not pertain to the abandonment, destruction, or donation to public bodies, under secton 202 (h) of the act, of property which has no commercial value or of which the estimated cost of continued care and handling would exceed the estimated proceeds (covered by General Services Administration Temporary Regulation 5, 14 F. R. 5514).

§ 55.32 *Needs of Federal agencies paramount.* Any need for personal property expressed by any Federal agency (including the Senate and the House of Representatives, the District of Columbia and mixed-ownership Government corporations) shall be paramount to any educational use determination or allocation by the Federal Security Administrator or the Secretary of Defense, if such need shall be made known to the holding agency prior to shipment or delivery to donees pursuant to this subpart.

§ 55.33 *Delegation of authority.* Authority is hereby delegated to the heads of all executive agencies, with full power of redelegation, to donate and to execute transfers and deliveries of donable property in accordance with this subpart.

§ 55.34 *Service educational activities.* Donable property which has been designated and determined by the Secretary of Defense to be usable and necessary for service educational activities shall, unless otherwise directed by the Administrator, be available for allocation by the Secretary of Defense when determined surplus and may thereafter be donated to eligible applicants. Applications to be submitted by service educational activities shall be in such form as may be prescribed by the Secretary of Defense.

Educational Institutions

§ 55.35 *Responsibility of Federal Security Administrator.* Both nationally and by areas, the Federal Security Administrator shall determine the over-all requirements of educational institutions for donable property on the basis of needs and utilization. Instructions for use of educational institutions in obtaining donable property, including terms and conditions, shall be as prescribed by the Federal Security Administrator.

§ 55.36 *Determination by Federal Security Administrator.* The Federal Security Administrator may determine that excess donable property is usable and necessary for educational purposes, subject to the provisions of § 55.34.

§ 55.37 *Allocation by Federal Security Agency.* The Federal Security Agency may allocate to educational institutions such donable property, approved by the Administration for donation, as to which a determination has been made pursuant to § 55.36. Applications from educational institutions shall adequately describe the donable property applied for, supply shipping instructions, provide that the applicant agrees to pay, and certify that funds are available to pay, the costs of care and handling incurred incident to donation, including packing, preparation for shipment, shipping, loading, and transporting such property. Such application shall not require shipment of unreasonably small quantities. The Federal Security Administrator shall endorse such application with a certification in the following form:

> Pursuant to the Federal Property and Administrative Services Act of 1949, Public Law 152, 81st Congress, and regulations promulgated thereunder, the Federal Security Administrator certifies that he has determined that the property herein requested is usable and necessary for educational purposes; that it is hereby allocated to the applicant on the basis of needs and utilization; and that the applicant is eligible to receive such property in accordance with said act.

The original and two copies of the certified application (or less if mutually agreed upon) shall be transmitted to the holding agency by the Federal Security Administrator.

§ 55.38 *Donation and shipment by holding agencies.* Upon receipt of a proper certified application for donable property, the holding agency shall donate and promptly ship or deliver the property covered thereby in accordance with the shipping instructions contained in such application.

Subpart D—Disposal Other Than by Donation

§ 55.41 *Responsibility for disposal.* Each holding agency shall, except as otherwise provided in other order of the Administrator, dispose of surplus personal property in its possession in accordance with the regulations in this part.

§ 55.42 *Disposal methods and procedures.* Except as provided in Subpart C, holding agencies shall dispose of surplus personal property in accordance with this subpart.

§ 55.43 *Competitive bid sales.* Holding agencies shall, except as otherwise provided by this subpart, sell surplus personal property by competitive bid sale after advertising. Competitive bid sales shall include sealed bid sales, spot bid sales, and auction sales.

§ 55.44 *Sealed bid sales.* In sealed bid sales, bidders shall be required to submit to the office designated for receipt and opening of bids, sealed written bids on authorized bid forms for

public opening at a time and place designated.

§ 55.45 *Spot bid sales.* In spot bid sales, bidders shall be furnished with bid forms in advance of the bidding, a bid form to be used for each lot or unit to be separately sold. Requests for bids on items offered for sale shall be made by the official in charge. In requesting bids, the official in charge shall announce the item, its identification number, and a brief description of the item or lot. The right to reject all such bids shall be reserved in the terms of sale; and lots for which all bids have been rejected may be re-offered at the same sale in order to secure an acceptable bid price. Awards shall be made or bids rejected immediately following the offering of the item or lot. The bids at spot bid sales shall not be disclosed except at the announcement of award for any item or lot. Where mailed written bids at spot bid sales are permitted, they shall be sealed and not disclosed except at the announcement of award. Bidders may be required to register in advance of the sale. Any special conditions of sale shall be issued in printed form to everyone attending the sale. Final payment on such sales must be by cash, certified check, cashier's check, bank draft, express or postal money order, payable to the Treasurer of the United States, except as provided in § 55.54. Deposits shall be in similar form or in such other form of security as may be acceptable to the contracting officer.

§ 55.46 *Auction sales.* Sales of surplus personal property by holding agencies may be made by public auction. Such sales may be made either by qualified personnel of holding agencies or public auctioneers when authorized. Terms and conditions of sale shall be announced by the person conducting the auction, immediately prior to commencement of the sale. Final payment on such sales must be by cash, certified check, cashier's check, bank draft, express or postal money order, payable to the Treasurer of the United States, except as provided in § 55.54. Deposits shall be in similar form or in such other form of security as may be acceptable to the contracting officer. Such offerings must reserve in the Government the right to accept or reject any or all bids. Lots for which all offers have been rejected may be re-offered later at the same sale to secure acceptable bids.

§ 55.47 *Lotting.* To the extent practicable, and consonant with the type of property and usual commercial practice, property offered for sale shall be assembled into reasonably sized lots of like or similar categories of items.

§ 55.48 *Inspection by bidders.* Sufficient time prior to the date for submission of bids shall be allowed to permit inspection by potential purchasers.

§ 55.49 *Negotiation.* Holding agencies may sell surplus property by negotiated sale where:

(a) The reasonable recovery value involved in any case does not exceed $500;

(b) The property is such a hazard to health or property as to require immediate disposition;

(c) The property will spoil or deteriorate so rapidly as to require immediate disposition;

(d) After adequate advertising, no acceptable bids have been received: *Provided,* That all responsible bidders who responded to the previous advertising shall be offered an opportunity to participate in the negotiations;

(e) Authorized under § 55.52;

(f) Otherwise authorized by law; or

(g) Authorized by the Administrator.

Written justification for negotiated sales in excess of $500 shall be prepared and filed with the record of disposal in each case. Agencies making sales by negotiation shall secure competition to the maximum extent feasible under the circumstances.

§ 55.50 *Reviewing authority.* Approval by a reviewing authority of each holding agency shall be required for each proposed award involving the type of sale and acquisition cost (actual or estimated) of property as follows:

(a) By negotiation--$1,000 or more;

(b) By competitive bid sale—$10,000 or more.

§ 55.51 *Property controlled by other law.* No property shall be disposed of in violation of any other applicable law.

§ 55.52 *Sales for catastrophe relief.* Surplus personal property may, with the approval of an authorized field representative of an agency designated by the President under the provisions of the Independent Offices Appropriation Act, 1950 (or other similar provisions of law) to render assistance in alleviating hardship or suffering caused by any catastrophe, be disposed of by the holding agency through negotiated sale to any State or other non-Federal public body which is in possession, without regard to the provisions of Subpart C relating to donation for educational purposes.

§ 55.53 *Sales to Government employees.* Holding agencies shall not sell surplus personal property to persons known to be officers or employees of the Federal Government, except to the extent determined by the heads of such agencies to be in the best interest of the Government, and under procedures and safeguards, prescribed by the heads of such agencies, adequate to preclude collusion and fraud.

§ 55.54 *Credit.* When approved by the head of a holding agency or his designee, any holding agency may provide for sale of surplus personal property on credit where deemed necessary or desirable in furtherance of the basic policy objectives set forth in § 55.22 or in the best interest of the Government. In such cases, the terms and conditions of sale shall specifically provide therefor.

SUBPART E—MISCELLANEOUS PROVISIONS

§ 55.61 *Applicability of Federal excise taxes.* Federal manufacturers' and retailers' excise taxes are not applicable to the sale or other disposal by the Government of surplus personal property. Federal manufacturers' excise taxes do not apply to subsequent sales, including uses, by purchasers of Government property. Federal retailers' excise taxes apply to subsequent sales but not to subsequent uses by the purchasers unless the subsequent sale is made for resale and a certificate of resale is obtained. The foregoing does not apply to gasoline, and holding agencies shall make appropriate arrangements with the Bureau of Internal Revenue with respect to the disposal thereof. Questions relating to the applicability of Federal excise taxes arising from the disposal of surplus property should be referred to the Bureau of Internal Revenue.

§ 55.62 *Authority under other laws.* In order to effectuate the provisions of Title II of the act, actions relating to donation and disposal of personal property subject to, and within the scope of authority conferred on the Administrator by the act, shall not be taken under other laws, except as authorized by section 502 (d) (1)–(17) of the act, or expressly authorized by subsequently enacted law, but shall be taken only in accordance with the regulations in this part unless the Administrator, upon written application by the holding agency, shall otherwise permit in writing.

§ 55.63 *Exceptions.* Exceptions from any portion of the regulations in this part shall be permitted only by direction of the Administrator.

Dated: September 21, 1950.

JESS LARSON,
Administrator.

[F. R. Doc. 50-8427; Filed, Sept. 26, 1950; 8:46 a. m.]

PROPOSED RULE MAKING

CIVIL AERONAUTICS BOARD

[14 CFR, Parts 1, 2, 3, 4b, 6, 15]

AIRWORTHINESS REGULATIONS

NOTICE OF PROPOSED RULE MAKING

Pursuant to authority delegated by the Civil Aeronautics Board to the Bureau of Safety Regulation, notice is hereby given that the Bureau will propose to the Board amendments of airworthiness parts of the Civil Air Regulations in substance as hereinafter set forth.

Interested persons may participate in the making of the proposed rules by submitting such written data, views, or arguments as they may desire. Communications should be submitted in duplicate to the Civil Aeronautics Board, attention Bureau of Safety Regulation, Washington 25, D. C. All communications received by October 31, 1950, will be considered by the Board before taking further action on the proposed rules.

Copies of such communications will be available after November 3, 1950, for perusal by interested persons at the Docket Section of the Board, Room 5412, Commerce Building, Washington, D. C.

In a policy statement dated October 6, 1949, the Civil Aeronautics Board announced a procedure for the annual review of airworthiness parts of the Civil Air Regulations. It was then indicated that after consideration of comments on, and suggestions for amendment of, the airworthiness requirements at the annual review meetings, which were to be held in the first two weeks of August 1950, that by October 1, 1950, there would be published a notice of proposed rule making indicating those specific amendments which, in the opinion of the Bureau of Safety Regulation, should be recommended for adoption by the Board.

Attached hereto are the amendments proposed under the caption, "Proposed Rules." Also attached is an "Explanatory Statement" setting forth the basis and purpose thereof.

It will be noted that due to circumstances resulting from the current military situation, it was impossible to consider at the annual review meetings any of the more complicated questions in transport category air worthiness requirements. Such matters will, therefore, be handled on an ad hoc basis outside of the scope of the annual review.

These amendments are proposed under the authority of Title VI of the Civil Aeronautics Act of 1938, as amended.

(Sec. 205, 52 Stat. 984; 49 U. S. C. 425. Interpret or apply secs. 601–610, 52 Stat. 1007–1012, 49 U. S. C. 551–560)

Dated: September 20, 1950, at Washington, D. C.

By the Bureau of Safety Regulation.

[SEAL] JOHN M. CHAMBERLAIN,
Director.

Explanatory statement. The following statement sets forth the basis and purpose of the proposed amendments to the Civil Air Regulations under headings designed to facilitate reference thereto.

Proposed Part 1 includes a revision of current Parts 1 and 2 and portions of Part 43. It is an attempt to synthesize and systematize the administrative rules for obtaining necessary aircraft and product certification. It also provides for the identification of products and aircraft in accordance with current requirements. In most significant respects, the part does not attempt to change current procedures or practices, but merely to reflect them accurately.

The most important changes from current requirements in the proposal are those affecting the duration of airworthiness certificates, and the provision in the proposal that airworthiness certificates shall be of one-year duration automatically renewable when maintained under a continuous maintenance system, or reissued upon satisfactory completion of the annual inspection does not depart radically from current practice. In addition, the part contains new requirements designed to permit more adequate supervision of products manufactured by a subsidiary manufacturer.

The most extensive amendments resulting from the annual review cycle are those proposed for Part 3.

A considerable step towards simplifying type certification of small aircraft is proposed. For example, aircraft of 6,000 pounds or less maximum certificated take-off weight, will not be subject to the required service tests, and take-off, climb, landing, and trim requirements have been modified.

In addition, the current spin recovery requirements have been modified to permit demonstration of recovery with use of normal controls, and more realistic requirements for stall handling characteristics are set forth. It is further proposed, on the other hand, to provide a requirement for stall warning indication. Analysis of available safety statistics appears to establish that such modification of the regulations would contribute substantially to safety.

Amendments are also proposed to increase the crash load factor requirements for seat attachments and safety belt anchorages. The values proposed are designed to increase the chance of survival in crashes where the cabin structure remains relatively intact, and are consistent with the recently established crash load factor requirements for safety belts.

There are additional proposed amendments of a relatively minor nature, based upon experience with the requirements of the part, designed to increase safety or to facilitate administration of the part.

It should be noted that, as a result of discussions held during the annual review meetings, serious consideration is being given to limiting the applicability of Part 3 to airplanes having maximum certificated take-off weights of 12,500 pounds or less, and to establishing a separate cargo category.

Position light requirements. The requirements herein proposed for position lights are little different in substance from those currently in effect except for certain modifications of intensity requirements for transport category aircraft to bring such requirements into conformity with international standards. However, it is our understanding that United States air carrier position light systems already meet such modified requirements.

It is proposed that unnecessary material on position lights be eliminated from the applicable sections of Parts 3, 4b, 6, and 15. In addition, it is proposed that those sections be revised to provide a greater degree of clarity and uniformity.

Part 6, as adopted in 1945, was an initial attempt to establish standards for rotorcraft airworthiness. As of that date in view of the then extremely limited experience with rotorcraft, it was undesirable to specify too rigid standards which might have had the effect of restricting the development of rotorcraft. At the present time, in view of the rapid development of this category aircraft since 1945 and increased engineering and operational experience with it, it is possible to specify certain additional standards which must be met for type certification. However, we recognize the fact that rotorcraft are still in a developmental stage where the contribution to safety from a more rigid prescription of standards than proposed would probably be outweighed by the depressing effect of such prescription on new developments from manufacturers in the field and on applications for type certification from manufacturers not yet in the field.

The proposed revision of Part 6 prescribes: (a) Conservative added power-plant requirements, (b) more comprehensive performance, flight, and structural requirements, (c) more detailed design and construction requirements, (d) new equipment and operating standards, and (e) the compilation of flight and maintenance manuals to be furnished to operators of rotorcraft. It is our opinion that this revision will substantially increase safety in the rotorcraft field without unduly depressing future development.

The part also expressly provides that the airworthiness standards to be applicable to the type design shall be those standards in effect at the time of application for the type certificate, thus expressly including in the part, the industry sponsored principle of non-retroactivity for airworthiness standards. The holder of the type certificate, however, is given the option of complying with such standards, or with those in effect at the later date for subsequent amendments to the type design. Procedurally, it is provided that the part, as amended, on the date of application for the type certificate shall be considered to be incorporated in the certificate. Such a provision shall be made applicable to current Part 6, thus making possible the promulgation of the proposal contained herein as revised Part 6, rather than Part 6b.

In accordance with the program announced with the adoption of enabling amendments to the Civil Air Regulations authorizing the establishment of the T. S. O. system for approval of aircraft appliances, it is proposed to eliminate §§ 15.21 and 15.31 from Part 15 providing for the type certification of landing flares and parachutes, since it is expected that technical standard orders for such equipment will be adopted and effective by January 1, 1951.

It is also proposed to eliminate §§ 15.40, 15.50, and 15.51 providing for certification of control and structural units and particularized equipment for aircraft types since these provisions have not proven to be useful to the industry.

As previously mentioned, § 15.20 on position light systems is to be revised to provide a greater degree of clarity and uniformity and to modify certain of the intensity requirements for transport category aircraft to bring such requirements into conformity with international standards.

a. It is proposed to rescind Part 2, Type and Production Certificates, and to revise Part 1, effective January 1, 1951, to read as follows:

PART 1—CERTIFICATION, IDENTIFICATION, AND MARKING OF AIRCRAFT AND RELATED PRODUCTS

APPLICABILITY AND DEFINITIONS

1.0 Applicability of this part.
1.1 Definitions.
1.2 Type design.

TYPE CERTIFICATES

1.10 Application.
1.11 Products for which issued.
1.12 Requirements for issuance.
1.13 Location of manufacturing facilities.
1.14 Type design changes.
1.15 Transferability.
1.16 Inspection.
1.17 Duration.
1.18 Display.
1.19 Privileges.
1.20 Statement of conformity.

PRODUCTION CERTIFICATES

1.30 Application.
1.31 Product for which issued.
1.32 Requirements for issuance.
1.33 Location of manufacturing facilities.
1.34 Quality control.
1.35 Statement of conformity.
1.36 Data required; prime manufacturer.
1.37 Data required; subsidiary manufacturer.
1.38 Modification of required data.
1.39 Multiple products.
1.40 Production limitation record.
1.41 Modification of the production limitation record.
1.42 Transferability.
1.43 Duration.
1.44 Display.

AIRCRAFT AND PRODUCT IDENTIFICATION

1.50 Identification.

AIRWORTHINESS CERTIFICATES

1.60 Application.
1.61 Aircraft categories for which airworthiness certificates are issued.
1.62 Amendment or modification.
1.63 Transferability.
1.64 Duration.
1.65 Display.
1.66 Airworthiness certificates for normal, utility, acrobatic, and transport categories.
1.67 Airworthiness certificate; requirement for issuance.
1.68 Airworthiness certificates for restricted category aircraft.
1.69 Airworthiness certificates for restricted category aircraft; requirements for issuance.
1.70 Multiple airworthiness certification.
1.71 Airworthiness certificate for limited category aircraft.
1.72 Airworthiness certificate for limited category aircraft; requirements for reissuance.
1.73 Experimental certificates.
1.74 Experimental certificates; requirements for issuance.
1.75 Special flight permits.
1.76 Special flight permits; requirements for issuance.

AIRCRAFT NATIONALITY AND REGISTRATION MARKS

1.80 General.
1.81 Display of identification marks.
1.82 Location of identification marks.
1.83 Measurements of identification marks.
1.84 Color.
1.85 Affixation.
1.86 Design.
1.87 Maintenance.
1.88 Identification marks for nonconventional aircraft.
1.89 Identification marks for export aircraft.

APPLICABILITY AND DEFINITIONS

§ 1.0 *Applicability of this part.* This part establishes administrative requirements for the issuance of type, production, and airworthiness certificates and for the identification and marking of aircraft and related products.

§ 1.1 *Definitions.* (a) As used in this part, terms shall be defined as follows:

(1) *Administrator.* The Administrator means the Administrator of Civil Aeronautics.

(2) *Aircraft.* An aircraft means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air.[1]

(3) *Aircraft engine.* An aircraft engine means an engine used, or intended to be used, for propulsion of aircraft and includes all parts, appurtenances, and accessories thereof other than propellers.[1]

(4) *Appliances.* Appliances means instruments, equipment, apparatus, parts, appurtenances, or accessories, of whatever description, which are used, or are capable of being or intended to be used, in the navigation, operation, or control of aircraft in flight (including parachutes and including communication equipment and any other mechanism or mechanisms installed in or attached to aircraft during flight), and which are not a part or parts of aircraft, aircraft engines, or propellers.[1]

(5) *Authorized representative of the Administrator.* An authorized representative of the Administrator means any employee of the Civil Aeronautics Administration or any private person, authorized by the Administrator to perform any of the duties delegated to the Administrator by the provisions of this part.

(6) *Person.* Person means any individual, firm, copartnership, corporation, company, association, joint-stock association, or body politic; and includes any trustee, receiver, assignee, or other similar representative thereof.[1]

(7) *Prime manufacturer.* A prime manufacturer means the person who initiated the design and construction of the product and who applied for the type certificate, or any person to whom a current right to reproduce the product has been transferred.

(8) *Product.* The term product, as used in this part means:

(i) An aircraft,

(ii) An aircraft engine,

(iii) A propeller, or

(iv) Any appliance specified in the Civil Air Regulations as eligible for a type certificate.

(9) *Propeller.* A propeller includes all parts, appurtenances, and accessories thereof.[1]

(10) *Subsidiary manufacturer.* A subsidiary manufacturer means the person who contracted with the prime manufacturer to produce and to supply to the prime manufacturer major assemblies and components which are manufactured in conformity with the prime manufacturer's approved drawings and data for the fabrication of the product.

(11) *United States.* United States means the several States, the District of Columbia, and the several Territories and possessions of the United States, including the Territorial waters and the overlying air space thereof.[1]

[1] As defined in section 1 of the Civil Aeronautics Act of 1938, as amended.

§ 1.2 *Type design.* The type design shall consist of such test reports and computations as are necessary to demonstrate that the product complies with the pertinent airworthiness requirements, such drawings and specifications as are necessary to disclose the configuration of the product and all design features covered in the pertinent airworthiness requirements, sufficient information on materials and processes to define the strength of the structure, and sufficient other data to permit the airworthiness of subsequent products of the same type to be determined by comparison with the type design.

TYPE CERTIFICATES

§ 1.10 *Application.* Any person, whether or not a citizen of the United States, may apply for the issuance of a type certificate. The application for a type certificate for a specified product shall be made upon a form prescribed and furnished by the Administrator.

§ 1.11 *Products for which issued.* A type certificate may be issued for an aircraft, aircraft engine, propeller, or any appliance for which certification is provided elsewhere in the Civil Air Regulations.

§ 1.12 *Requirements for issuance.* A type certificate for a product shall be issued when:

(a) The applicant has submitted such descriptive data, test reports, and other information required by the pertinent airworthiness regulations for the type design, and

(b) Upon examination of the type design and the completion of all tests and inspections, the Administrator finds that the type design meets the requirements of the applicable Civil Air Regulations.

§ 1.13 *Location of manufacturing facilities.* No type certificate for a product shall be issued if the manufacturing facilities therefor are located outside the United States, unless where facilities are located outside the United States the Administrator finds that no undue burden on the Government is created in administering applicable requirements of the act or regulations issued thereunder.

§ 1.14 *Type design changes.* Changes in the type design shall be made in accordance with the rules established in the part of the Civil Air Regulations under which the type certificate was issued.

§ 1.15 *Transferability.* A type certificate may be transferred or made available to third persons by licensing agreements: *Provided,* That the grantor shall immediately notify the Administrator in writing of any transfer, licensing agreement, or termination thereof: *And provided further,* That the provisions of § 1.13 are complied with.

§ 1.16 *Inspection.* A representative of the Administrator shall be permitted to make such inspections as may be neces-

sary to determine initial and continued compliance with the requirements of this part.

§ 1.17 *Duration.* A type certificate shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Board.

§ 1.18 *Display.* Type certificates shall be made available for examination by an authorized representative of the Board or of the Administrator.

§ 1.19 *Privileges.* The holder of a type certificate or license may produce duplicates of any product for which a type certificate has been issued.

§ 1.20 *Statement of conformity.* The holder of a type certificate only or of a current right to the benefits of a type certificate only under a licensing arrangement, upon the initial transfer by him of the ownership of any product manufactured under such type certificate or upon application for original issuance of an airworthiness certificate for an aircraft, shall furnish to an authorized representative of the Administrator a statement of conformity for such product on a form prescribed by the Administrator. For aircraft manufactured under a type certificate only, there shall be included a statement that the aircraft referred to has been flight checked. When a production certificate is held in addition to the type certificate, the provisions of § 1.35 shall apply. The Administrator may consider military acceptance in lieu of a statement of conformity for a product which has been manufactured for the military service.

PRODUCTION CERTIFICATES

§ 1.30 *Application.* Any person, whether or not a citizen of the United States, may apply for the issuance of a production certificate. The application for a production certificate shall be made upon a form prescribed and furnished by the Administrator.

§ 1.31 *Product for which issued.* A production certificate shall be issued only for products for which a type certificate is currently in effect. The applicant shall hold a currently effective type certificate for the product to be manufactured or shall hold a current right to the benefits of such certificate under a licensing agreement.

§ 1.32 *Requirements for issuance.* A person shall be issued a production certificate when the Administrator finds, after examination of the supporting data and after inspection of the organization and production facilities, that the applicant complies with the requirements of §§ 1.33 through 1.37.

§ 1.33 *Location of manufacturing facilities.* No production certificate for a product shall be issued if the manufacturing facilities therefor are located outside the United States, unless where facilities are located outside the United States the Administrator finds that no undue burden on the Government is created in administering applicable requirements of the act or regulations issued thereunder.

§ 1.34 *Quality control.* The applicant shall show that he is adequately prepared to manufacture and control the quality of any product for which he requests production certification, so that each article shall conform with the design provisions of the pertinent type certificate.

§ 1.35 *Statement of conformity.* It shall not be necessary for the holder of a production certificate to furnish a separate statement of conformity for each of the products produced.

§ 1.36 *Data required; prime manufacturer.* The applicant shall submit the following data:

(a) A description of the manufacturing layout and production flow,

(b) A listing and description of any special processes required by the product or products to be manufactured,

(c) A description of the established quality-control organization, its functions and responsibilities, including an organizational chart showing the lines of authority for quality control and inspection responsibility,

(d) If the application is for the manufacture of an aircraft, a description of the flight test procedures established by the manufacturer for the testing of production aircraft and a copy of the flight test check list to be used, and for other products a description of such tests established by the manufacturer as may be appropriate for the product, and

(e) A list, by name and address, of any subsidiary manufacturers. (See § 1.37.)

§ 1.37 *Data required; subsidiary manufacturer.* Where found necessary by the Administrator, a subsidiary manufacturer shall submit the data prescribed by paragraphs (a), (b), and (c) of § 1.36.

§ 1.38 *Modification of required data.* The holder of a production certificate shall immediately notify the Administrator in writing of any changes affecting the data required by § 1.36 which may alter the conformity or quality control of the product being manufactured.

§ 1.39 *Multiple products.* The Administrator may authorize more than one type certificated product to be manufactured under the terms of one production certificate provided that the products have similar production characteristics.

§ 1.40 *Production limitation record.* A production limitation record shall be issued as part of a production certificate. The record shall list the type certificate of every product which the applicant is authorized to manufacture under the terms of a production certificate. Where different models of a basic type approved under the same type certificate number require different fabrication methods and processes, the Administrator may list the model designation of the product for which authorization is given, as well as the type certificate number, on the production limitation record.

§ 1.41 *Modification of the production limitation record.* The holder of a production certificate desiring the addition of a type certificate and/or model to the production certificate shall submit an application therefor on a form and in a manner prescribed by the Administrator. The applicant shall comply with the applicable requirements of §§ 1.32 through 1.36 and § 1.38.

§ 1.42 *Transferability.* A production certificate shall not be transferred.

§ 1.43 *Duration.* A production certificate shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Board, or the location of the manufacturing facility is changed.

§ 1.44 *Display.* A production certificate shall be prominently displayed in the main office of the factory.

AIRCRAFT AND PRODUCT IDENTIFICATION

§ 1.50 *Identification.* (a) Each product manufactured under the terms of a type or production certificate shall display permanently such data as may be required to show its identity. The data shall include such of the following items as the Administrator finds appropriate:

(1) Manufacturer's name,

(2) Model designation,

(3) Manufacturer's serial number (if article is numbered serially), otherwise the date of manufacture, except that articles subject to deterioration as a result of aging (parachutes, parachute flares, etc.) shall bear the date of manufacture in addition to the serial number, if any,

(4) Type certificate number,

(5) Production certificate number,

(6) Capacity or rating.

AIRWORTHINESS CERTIFICATES

§ 1.60 *Application.* Any U. S. Citizen may apply for issuance of an airworthiness certificate for an aircraft provided he is the registered owner of the aircraft or his agent. The application for an airworthiness certificate shall be made upon a form prescribed and furnished by the Administrator.

§ 1.61 *Aircraft categories for which airworthiness certificates are issued.* Airworthiness certificates are issued for aircraft whose type design has been certificated under the normal, utility, acrobatic, or transport categories, for aircraft of the restricted category, and for surplus military aircraft in the limited category. In addition, experimental certificates and special flight permits are issued.

§ 1.62 *Amendment or modification.* An airworthiness certificate may be amended or modified only upon application to the Administrator.

§ 1.63 *Transferability.* An airworthiness certificate shall be transferred with the aircraft.

§ 1.64 *Duration.* The duration of an airworthiness certificate shall be in accordance with the provisions of paragraphs (a) and (b) of this section:

(a) An airworthiness certificate shall remain in effect for one year from the date of issuance unless it is surrendered, suspended, revoked, or a termination date is otherwise established by the Board; or, in the case of an experimental airworthiness certificate, a lesser period is established by the Administrator.

(b) A currently valid airworthiness certificate may be automatically renewed when the aircraft is maintained under a continuous maintenance system approved by the Administrator, or reissued upon completion of the annual inspection elsewhere required in the Civil Air Regulations.

§ 1.65 *Display.* An airworthiness certificate shall be carried in the aircraft at all times, and shall be displayed as prescribed by the Administrator.

§ 1.66 *Airworthiness certificates for normal, utility, acrobatic, and transport categories.* Aircraft certificated in the normal, utility, acrobatic, and transport categories may be used for the carriage of persons and property for compensation or hire.

§ 1.67 *Airworthiness certificate; requirement for issuance.* The requirements for the issuance of an airworthiness certificate are stated in paragraphs (a) and (b) of this section:

(a) *Aircraft manufactured under a production certificate.* An applicant for the original issuance of an airworthiness certificate for an aircraft, whose type design was certificated in categories other than the limited category, manufactured under the terms of a production certificate may be issued such certificate without further showing. The Administrator may inspect the aircraft to see if it conforms to the type design.

(b) *Aircraft manufactured under type certificate only.* An applicant for the original issuance of an airworthiness certificate for an aircraft, whose type design was certificated in categories other than the limited category, manufactured under the terms of a type certificate only shall be issued such certificate upon presentation of a statement of conformity for such aircraft issued by the manufacturer when, upon inspection of the aircraft, the Administrator finds that the aircraft conforms to the type design, and is in a condition for safe operation.

§ 1.68 *Airworthiness certificates for restricted category aircraft.* Aircraft certificated in the restricted category may not be used for the carriage of persons for compensation or hire. For purposes of this section, crop dusting, seeding, and other similar specialized operations are not considered as the carriage of persons or cargo for compensation or hire. Other special limitations for such aircraft are prescribed under the provisions of Part 8 of this chapter.

§ 1.69 *Airworthiness certificates for restricted category aircraft; requirements for issuance.* The requirements for issuance of an airworthiness certificate for an aircraft in the restricted category are as stated in paragraphs (a) and (b) of this section:

(a) *Aircraft manufactured under a production certificate or type certificate only.* An applicant for the original issuance of an airworthiness certificate for an aircraft in the restricted category, type certificated under the provisions of § 8.10 (a) (1) of this chapter, shall comply with the appropriate provisions of § 1.67.

(b) *Other aircraft.* An applicant for the issuance of an airworthiness certificate for aircraft of the restricted category other than those referred to in paragraph (a), such as surplus military aircraft and modified civil aircraft, may be issued such certificate when he demonstrates compliance wth the following provisions:

(1) The aircraft has been type certificated under the provisions of § 8.10 (a) (2) of this chaper, or modified under the provisions of § 8.10 (b) of this chapter of the Civil Air Regulations;

(2) The aircraft has been inspected by the Administrator and found by him to be in a good state of preservation and repair and in condition for safe operation; and

(3) The Administrator has prescribed operating limitations in accordance with Part 8 of this chapter.

§ 1.70 *Multiple airworthiness certification.* Multiple airworthiness certification shall conform to the provisions of paragraphs (a) and (b) of this section.

(a) An aircraft shall be issued an airworthiness certificate in the restricted category and in any one or more of the other airworthiness categories prescribed by the Civil Air Regulations, if the applicant shows compliance with the requirements for each category when the aircraft is in the configuration for that category and if the aircraft can be converted from one category to another by removal or addition of equipment by simple mechanical means.

(b) Any aircraft certificated in the restricted and any other category shall be inspected and approved by an authorized representative of the Administrator, or by a certificated mechanic with an appropriate airframe rating, to determine airworthiness each time the aircraft is converted from the restricted category to another category for the carriage of passengers for compensation or hire, unless the Administrator finds this unnecessary for safety in a particular case.

§ 1.71 *Airworthiness certificate for limited category aircraft.* Airworthiness certificates were issued for surplus military aircraft of the limited category prior to August 31, 1948, under the provisions of Part 9 of this chapter. Aircraft in the limited category may not be used for the carriage of persons or property for compensation or hire.

§ 1.72 *Airworthiness certificate for limited category aircraft; requirements for reissuance.* An applicant for an airworthiness certificate for an aircraft in the limited category shall show that the aircraft has been previously issued a *limited category aircraft; requirements* had been surrendered or has expired, and that the aircraft complies fully with the requirements of Part 9 of this chapter of the Civil Air Regulations.

§ 1.73 *Experimental certificates.* Experimental certificates are issued for amateur-built aircraft and for aircraft which are to be used for experiment, for exhibition, for air racing, and to show compliance with Civil Air Regulations for the issuance of type certificates and related purposes.

§ 1.74 *Experimental certificates; requirements for issuance.* The requirements for the issuance of experimental certificates are as stated in paragraphs (a) and (b) of this section:

(a) In applying for an experimental certificate the applicant shall submit:

(1) A statement in a form and manner prescribed by the Administrator setting forth the purpose for which the aircraft is to be used,

(2) Sufficient data, such as photographs, to identify the aircraft, and,

(3) Upon inspection of the aircraft, any pertinent information found necessary by the Administrator to safeguard the general public.

(b) Appropriate operating restrictions for the use of such aircraft shall be prescribed by the Administrator.

(1) Experimental aircraft shall not be used for the carriage of persons or property for compensation or hire.

§ 1.75 *Special flight permits.* A special flight permit may be issued for an aircraft which may not currently meet applicable airworthiness requirements, but which is capable of safe flight, for the purpose of permitting the aircraft to be flown to a base where repairs or alterations are to be made or to permit the delivery or export of the aircraft.

§ 1.76 *Special flight permits; requirements for issuance.* The requirements for the issuance of special flight permits are as stated in paragraphs (a) and (b) of this section:

(a) Where found necessary by the Administrator, an applicant for a special flight permit shall submit a statement in a form approved by the Administrator indicating the purpose of the flight, the proposed itinerary, the duration of authorization requested, the persons to be on board the aircraft, the particulars, if any, in which the aircraft does not comply fully with the applicable airworthiness requirements, and the restrictions, if any, deemed necessary for safe operation of the aircraft.

(b) The Administrator shall accomplish, or shall require the applicant to accomplish, such appropriate inspections or tests as the Administrator may deem necessary in the interest of safety.

(c) Nothing in the foregoing paragraphs shall prevent the issuance to an air carrier by the Administrator of a general authorization to conduct ferry flights for specified purposes as above provided, under such terms and conditions as may from time to time be prescribed by the Administrator.

AIRCRAFT NATIONALITY AND REGISTRATION MARKS

§ 1.80 *General.* The identification of each aircraft shall be marked, and the markings shall be displayed as required in §§ 1.81 through 1.87. No design, mark, or symbol which modifies or confuses the identification marks shall be placed on an aircraft, except with the approval of the Administrator.

§ 1.81 *Display of identification marks.* Identification marks shall be displayed

in accordance with the following provisions:

(a) Aircraft registered for the first time after December 31, 1948, shall display identification marks consisting of the Roman capital letter "N," denoting United States registration, followed by the registration number. Other aircraft which display identification marks containing an airworthiness symbol "C," "R," "X," or "L" and which are operated solely within the continental limits of the United States may display such identification marks until the first time such aircraft are recovered or refinished to an extent necessitating the reapplication of the identification mark. Thereafter, such aircraft, and after December 31, 1950, all aircraft of United States registry operated outside of the continental limits of the United States, shall display identification marks consisting of the Roman capital letter "N," denoting United States registration, followed by the registration number.

(b) When an identification mark including only the Roman capital letter "N" and the registration number is utilized, limited and restricted category aircraft and experimental aircraft shall display the words "limited," "restricted," or "experimental," respectively, near each entrance to the cabin or cockpit of the aircraft. These markings shall be in letters not less than 2 inches nor more than 6 inches in height.

§ 1.82 *Location of identification marks.* Identification marks shall be located in accordance with paragraphs (a) through (e) of this section.

(a) *Fixed-wing aircraft.* The following shall be applicable to fixed-wing aircraft:

(1) *Wing surfaces.* Identification marks shall be displayed on the right half of the upper surface and the left half of the lower surface of the wing structure. As far as possible, the marks shall be located an equal distance from the leading and trailing edges of the wing. The top of the marks shall be toward the leading edge of the wing.

(2) *Vertical tail surfaces.* Identification marks shall be displayed on the upper half of the vertical tail surface. They shall be displayed on both sides of a single tail surface and on the outer sides of multitail surfaces. They may be placed either horizontally or vertically.

(3) *Fuselage surfaces.* Identification marks shall be displayed on the fuselage when the aircraft, as a result of design, does not have a vertical tail surface. The marks shall be located on each side of the top half of the fuselage, just forward of the leading edge of the horizontal tail surface. They may be placed either horizontally or vertically.

(b) *Rotorcraft.* The following requirements shall be applicable to rotorcraft:

(1) *Bottom fuselage surfaces.* Identification marks shall be displayed on the bottom surface of the fuselage or cabin. The top of the marks shall be toward the left side of the fuselage.

(2) *Side fuselage surfaces.* Identification marks shall be displayed below the window lines and as near the cockpit as possible.

(c) *Airships.* The following requirements shall be applicable to airships:

(1) *Horizontal stabilizer surfaces.* Identification marks shall be displayed on the upper surface of the right horizontal stabilizer and on the under surface of the left horizontal stabilizer. The top of the marks shall be toward the leading edge of the stabilizer. The marks shall be placed horizontally.

(2) *Vertical stabilizer surfaces.* Identification marks shall be displayed on each side of the bottom half of the vertical stabilizer. The marks shall be placed horizontally.

(d) *Spherical balloons.* Identification marks for spherical balloons shall be displayed on two places diametrically opposite, and shall be located near the maximum horizontal circumference of the balloon.

(e) *Nonspherical balloons.* Identification marks for nonspherical balloons shall be displayed on each side. They shall be located near the maximum cross section of the balloon, immediately above either the rigging band or the points of attachment of the basket or cabin suspension cables.

§ 1.83 *Measurements of identification marks.* The measurements of identification marks shall conform to the provisions of paragraphs (a) through (d) of this section:

(a) *Fixed-wing aircraft.* The following requirements shall be applicable to fixed-wing aircraft:

(1) *Wing surfaces.* The height of the identification marks on the wings shall be at least 20 inches.

(2) *Fuselage and vertical tail surfaces.* Identification marks shall be such as to leave at least a margin of 2 inches along each edge of the surface. Within these stipulations, the marks shall be as large as practicable, except that this rule shall not be interpreted as requiring the use of marks exceeding 6 inches in height or permitting the use of marks smaller than 2 inches in height. The letters and numbers of each separate group of identification marks shall be of equal height.

(b) *Rotorcraft.* The following requirements shall be applicable to rotorcraft:

(1) *Fuselage or cabin bottom surfaces.* Identification marks shall be at least $\frac{1}{3}$ as high as the fuselage is wide, but need not be more than 20 inches high.

(2) *Fuselage or cabin side surfaces.* Identification marks shall conform to requirements stipulated in paragraph (a) (2) of this section.

(c) *Lighter-than-air aircraft.* The following requirements shall be applicable to lighter-than-air aircraft.

(1) *Height of identification marks.* On each airship, spherical balloon, or nonspherical balloon identification marks shall be at least 20 inches high.

(d) *All aircraft.* The following requirements shall be applicable to all aircraft:

(1) *Width.* Identification marks shall be $\frac{2}{3}$ as wide as they are high with the exception of number "1" which shall be $\frac{1}{6}$ as wide as it is high.

(2) *Thickness.* Identification marks shall be formed by solid lines of a thickness equal to $\frac{1}{6}$ of the character height.

(3) *Spacing.* The space between the identification numbers and letters shall be not less than $\frac{1}{4}$ of the character width.

§ 1.84 *Color.* On each aircraft, identification marks shall contrast in color with the background.

§ 1.85 *Affixation.* On each aircraft, identification marks shall be painted or shall be affixed by any other means insuring a similar degree of permanence and legibility, except that aircraft intended for immediate delivery to a foreign purchaser may display identification marks of a readily removable material.

§ 1.86 *Design.* On each aircraft, identification marks shall have no ornamentation.

§ 1.87 *Maintenance.* On each aircraft, identification marks shall be kept clean and legible at all times.

§ 1.88 *Identification marks for nonconventional aircraft.* The identification marking rules prescribed in §§ 1.81 through 1.87 are intended to apply to conventional aircraft as they are known today. When aircraft are developed which do not conform to the general configuration of present-day aircraft, a procedure for identification marking will be prescribed by the Administrator.

§ 1.89 *Identification marks for export aircraft.* An aircraft manufactured in the United States for delivery outside the United States or its possessions may display such identification marks as are required by the State of registry of the aircraft. Such aircraft shall be operated only for the purpose of test and demonstration flights for a limited period of time or while in necessary transit to the purchaser.

b. It is proposed to amend Part 3, effective January 1, 1951, as follows:

1. By amending the title thereof to read as follows:

PART 3—AIRPLANE AIRWORTHINESS; NORMAL, UTILITY, AND ACROBATIC CATEGORIES

2. By amending § 3.19 to read as follows:

§ 3.19 *Flight tests.* (a) After proof of compliance with the structural requirements contained in this part, and upon completion of all necessary inspection and testing on the ground, and proof of conformity of the airplane with the type design, and upon receipt from the applicant of a report of flight tests conducted by him, there shall be conducted such official flight tests as the Administrator finds necessary to determine compliance with §§ 3.61 through 3.780.

(b) After the conclusion of the flight tests prescribed in paragraph (a) of this section such additional flight tests shall be conducted, on airplanes having a maximum certificated take-off weight of more than 6,000 pounds, as the Administrator finds necessary to ascertain whether there is reasonable assurance that the airplane, its components, and equipment are reliable and function

properly. The extent of such additional flight tests shall depend upon the complexity of the airplane, the number and nature of new design features, and the record of previous tests and experience for the particular airplane model, its components, and equipment. If practicable, the flight tests performed for the purpose of ascertaining the reliability and proper functioning shall be conducted on the same airplane which was used in flight tests to show compliance with §§ 3.61 through 3.780.

3. By adding a new § 3.80 to read as follows:

§ 3.80 *Alternate performance requirements.* As set forth in the following sections the provisions of §§ 3.84, 3.85, 3.86, and 3.112 (a) (2) (ii) shall not be applicable to airplanes having a maximum certificated take-off weight of 6,000 lbs. or less. In lieu thereof, such airplanes shall comply with the provisions of §§ 3.84a, 3.85a, 3.87, and 3.112 (c).

4. By adding a new § 3.84a to read as follows:

§ 3.84a *Take-off requirements; aircraft of 6,000 lbs. or less.* Airplanes having a maximum certificated take-off weight, of 6,000 lbs. or less shall comply with the provisions of this section.

(a) *Tail wheel type.* The elevator control at 0.8 V_{s_1} shall be sufficient to maintain an airplane attitude which will permit holding the airplane on the runway until a safe take-off speed is attained.

(b) *Nose wheel type.* The elevator control shall be sufficient to raise the nose wheel clear of the take-off surface at a speed equal to 0.85 V_{s_1}.

(c) *Runway characteristics.* The characteristics prescribed in paragraphs (a) and (b) of this section shall be demonstrated with:

(1) Take-off power,

(2) Most unfavorable weight,

(3) Most unfavorable c. g. position.

(d) *Demonstration of safety.* It shall be demonstrated that the airplane will take off safely without requiring an exceptional degree of piloting skill.

5. By adding a new § 3.85a to read as follows:

§ 3.85a *Climb requirements; aircraft of 6,000 lbs. or less.* Airplanes having a maximum certificated take-off weight of 6,000 lbs. or less shall comply with the requirements of this section.

(a) *Climb; normal climb condition.* The steady rate of climb at sea level shall not be less than 10 V_{s_1} or 300 feet per minute, whichever is the greater, with:

(1) Take-off power,

(2) Landing gear extended,

(3) Wing flaps in take-off position,

(4) Cowl flaps in the position used in cooling tests specified in §§ 3.581 through 3.596.

(b) *Climb; balked landing conditions.* The steady rate of climb at sea level shall not be less than 5 V_{s_0} or 200 feet per minute, whichever is the greater, with:

(1) Take-off power,

(2) Landing gear extended,

(3) Wing flaps in the landing position.

If rapid retraction is possible with safety, without loss of altitude and without requiring sudden changes of angle of attack or exceptional skill on the part of the pilot, wing flaps may be retracted.

6. By adding a new § 3.87 to read as follows:

§ 3.87 *Landing requirements; aircraft of 6,000 pounds or less.* For an airplane having a maximum certificated take-off weight of 6,000 pounds or less it shall be demonstrated that the airplane can be safely landed and brought to a stop without requiring an exceptional degree of piloting skill, and without excessive vertical acceleration, tendency to bounce, nose over, ground loop, porpoise, or water loop.

7. By adding a new § 3.112 (c) to read as follows:

§ 3.112 *Requirements.* • • •

(c) For aircraft having a maximum certificated take-off weight of 6,000 lbs. or less, the value specified in paragraph (a) (2) (ii) of this section shall be 1.5 V_{s_1}.

8. By amending § 3.120 to read as follows:

§ 3.120 *Stalling demonstration.* (a) Stalls shall be demonstrated under two conditions:

(1) With power off, and

(2) With the power setting not less than that required to show compliance with the provisions of paragraph (a) of § 3.85 or with those of § 3.85a, whichever is appropriate.

(b) In either condition required by paragraph (a) of this section it shall be possible, with flaps and landing gear in any position, with center of gravity in the position least favorable for recovery, and with appropriate airplane weights, to show compliance with the applicable requirements of paragraphs (c) through (f) of this section.

(c) For airplanes having independently controlled rolling and directional controls, it shall be possible to produce and to correct roll by unreversed use of the rolling control and to produce and correct yaw by unreversed use of the directional control up until the time the airplane pitches in the maneuver prescribed in paragraph (g) of this section.

(d) For two-control airplanes having either interconnected lateral and directional controls or for airplanes having only one of these controls, it shall be possible to produce and to correct roll by unreversed use of the rolling control without producing excessive yaw up until the time the airplane pitches in the maneuver prescribed in paragraph (g) of this section.

(e) During the recovery portion of the stall maneuver the pitch shall not exceed a value of 30° below level, and the airplane shall not develop any uncontrollable rolling or yawing characteristics before the recovery is achieved. The altitude lost in the stall maneuver shall be entered in the airplane flight manual.

(f) A clear and distinctive stall warning shall precede the stalling of the airplane, with the flaps and landing gear in any position, both in straight and turning flight. The stall warning shall occur at a speed exceeding that of stalling by not less than 5 but not more than 10 miles per hour.

(g) In demonstrating the qualities required by paragraphs (c) through (f) of this section, the procedure set forth in subparagraphs (1) and (2) of this paragraph shall be followed:

(1) With trim controls adjusted for straight flight at a speed of approximately 1.4 V_{s_1}, reduce speed by means of the elevator control until the speed is steady at slightly above stalling speed; then

(2) Pull elevator control back at a rate such that the airplane speed reduction does not exceed 1 mile per hour per second until a stall is produced as evidenced by an uncontrollable downward pitching motion of the airplane, or until the control reaches the stop. Normal use of the elevator control for recovery shall be allowed after such pitching motion has unmistakably developed.

9. By amending § 3.124 (a) to read as follows:

§ 3.124 *Spinning*—(a) *Category N.* All airplanes of 4,000 pounds or less maximum gross weight shall recover from a one-turn spin with the controls applied normally for recovery in not more than ½ additional turn and without exceeding either the limiting air speed or the limit positive maneuvering load factor for the airplane. In addition, there shall be no excessive back pressure either during the spin or in the recovery. It shall not be possible to obtain uncontrollable spins by means of any possible use of the controls. Compliance with the above shall be demonstrated at any permissible combination of weight and center of gravity positions obtainable with all or any part of the designed useful load. All airplanes in category N, regardless of weight, shall be placarded against spins or demonstrated to be "characteristically incapable of spinning" in which case they shall be so designated. (See paragraph (d) of this section.)

10. By rescinding paragraph (a) of § 3.318.

11. By rescinding §§ 3.319, "*External bracing*," and 3.320, "*Covering*."

12. By adding a new sentence at the end of paragraph (a) of § 3.390 to read as follows:

§ 3.390 *Seats and berths*—(a) *Passenger seats and berths.* • • • The accelerations prescribed in § 3.386 shall be multiplied by a factor of 1.33 for determining the strength of the seat and berth attachments to the structure.

13. By adding a new sentence at the end of § 3.391 to read as follows:

§ 3.391 *Safety belt or harness provisions.* • • • The accelerations prescribed in § 3.386 shall be multiplied by a factor of 1.33 for determining the strength of the belt anchorages to the seat or to the structure.

14. By amending the first sentence of § 3.417 to read as follows:

§ 3.417 *Propeller vibrations.* In the case of propellers with metal blades or other highly stressed metal components, the magnitude of the critical vibration

stresses under all normal conditions of operation shall be determined by actual measurements or by comparison with similar installations for which such measurements have been made.

15. By amending § 3.431 to read as follows:

§ 3.431 *Multiengine fuel system arrangement.* The fuel systems of multiengine airplanes which must comply with the provisions of § 3.85 (b) shall be arranged to permit operation in at least one configuration in such a manner that the failure of any one component will not result in the loss of power of more than one engine and will not require immediate action by the pilot to prevent the loss of power of more than one engine. Unless other provisions are made in order to comply with this requirement, the fuel system shall be arranged to permit supplying fuel to each engine through a system entirely independent of any portion of the system supplying fuel to the other engines. Other multiengine airplanes shall also comply with the requirement except that separate fuel tanks need not be provided for each engine.

16. By amending § 3.434 to read as follows:

§ 3.434 *Fuel flow rate for gravity systems.* The fuel flow rate for gravity systems (main and reserve supply) shall be 150 percent of the actual take-off fuel consumption of the engine.

17. By amending § 3.438 to read as follows:

§ 3.438 *Fuel system hot weather operation.* Airplanes with suction lift fuel systems or other fuel system features conducive to vapor formation shall be demonstrated to be free from vapor lock when using fuel at a temperature of 110° F. under critical operating conditions.

18. By amending § 3.442 (a) to read as follows:

§ 3.442 *Fuel tank installation.* (a) The method of supporting tanks shall not be such as to concentrate the loads resulting from the weight of the fuel in the tanks. Pads shall be provided to prevent chafing between the tank and its supports. Materials employed for padding shall be nonabsorbent or shall be treated to prevent the absorption of fuels. If flexible tank liners are employed, they shall be of an approved type, and they shall be so supported that the liner is not required to withstand fluid loads. Interior surfaces of compartments for such liners shall be smooth and free of projections which are apt to cause wear of the liner, unless provisions are made for the protection of the liner at such points or unless the construction of the liner itself provides such protection. A positive pressure shall be maintained within the vapor space of all bladder cells under all conditions of operation including the most critical condition of low air speed and rate of descent likely to be encountered in normal operation.

19. By amending paragraphs (a) and (b) of § 3.444 to read as follows:

§ 3.444 *Fuel tank sump.* (a) Each tank shall be provided with a drainable sump having a capacity of not less than 0.25 percent of the tank capacity or 1/16 gallon, whichever is the greater. The sump may be dispensed with if the fuel system is provided with a sediment bowl permitting ready ground inspection. The sediment bowl shall also be readily accessible for drainage. The capacity of the sediment chamber shall not be less than 1 ounce per each 20 gallons of the fuel tank capacity.

(b) If a fuel tank sump is provided, the capacity specified in paragraph (a) of this section shall be effective with the airplane in the normal ground attitude and the normal level flight attitude.

20. By amending § 3.449 (b) to read as follows:

§ 3.449 *Fuel pump and pump installation.* * * *

(b) Emergency fuel pumps shall be provided to permit supplying all engines with fuel in case of the failure of any one engine-driven pump, except that if an engine fuel injection pump which has been certificated as an integral part of the engine is used, an emergency pump is not required. Emergency pumps shall be available for immediate use in case of the failure of any other pump. If both the normal pump and emergency pump operate continuously, means shall be provided to indicate to the crew when either pump is malfunctioning.

21. By amending § 3.553 to read as follows:

§ 3.553 *Fuel system drains.* Drains shall be provided to permit safe drainage of the entire fuel system and shall incorporate means for locking in the closed position. The provisions for drainage shall be effective in the normal ground attitude.

22. By amending § 3.561 to read as follows:

§ 3.561 *Oil system.* Each engine shall be provided with an independent oil system capable of supplying the engine with an ample quantity of oil at a temperature not exceeding the maximum which has been established as safe for continuous operation. The usable oil tank capacity shall not be less than the product of the endurance of the airplane under critical operating conditions and the maximum oil consumption of the engine under the same conditions, plus a suitable margin to assure adequate system circulation and cooling. In lieu of a rational analysis of airplane range and oil consumption, a fuel-oil ratio of 30:1 by volume shall be considered acceptable.

23. By amending § 3.605 (b) to read as follows:

§ 3.605 *General.* * * *

(b) Each engine shall be provided with at least two separate air intake sources, except that in the case of an engine equipped with a fuel injector only one air intake source need be provided, if the air intake, opening, or passage is unobstructed by a screen, filter, or other part on which ice might form and so restrict the air flow as to affect adversely engine operation. Primary air intakes may open within the cowling only if that portion of the cowling is isolated from the engine accessory section by means of a fire-resistant diaphragm or if provision is made to prevent the emergence of backfire flames. Alternate air intakes shall be located in a sheltered position and shall not open within the cowling unless they are so located that the emergence of backfire flames will not result in a hazard.

24. By adding a new paragraph (d) to § 3.606 to read as follows:

§ 3.606 *Induction system de-icing and anti-icing provisions.* * * *

(d) Airplanes equipped with sea level engines employing carburetors which embody features tending to reduce the possibility of ice formation shall be provided with a sheltered source of air warmed at least to the extent that the cylinder cooling air is warmed.

25. By adding a new sentence at the end of paragraph (a) of § 3.624 to read as follows:

§ 3.624 *Fire wall construction.* (a) * * * However, fire-resistant material may be used in such applications on single-engine airplanes using unsupercharged wet sump engines, provided the opening that may result in case of fire will not involve a serious hazard from the standpoint of flame propagation to the sheltered side of the fire wall.

26. By amending § 3.637 to read as follows:

§ 3.637 *Powerplant fire protection.* Suitable means shall be provided to shut off the flow in all lines carrying flammable fluids into the engine compartment on multiengine airplanes required to comply with the provisions of § 3.85 (b).

27. By amending § 3.672 to read as follows:

§ 3.672 *Fuel quantity indicator.* Means shall be provided to indicate to the flight personnel the quantity of fuel in each tank during flight. Tanks, the outlets and air spaces of which are interconnected, may be considered as one tank and need not be provided with separate indicators. Exposed sight gauges shall be so installed and guarded as to preclude the possibility of breakage or damage. Sight gauges which form a trap in which water can collect and freeze shall be provided with means to permit drainage on the ground. Fuel quantity gauges shall be calibrated to read zero during level flight when the quantity of fuel remaining in the tank is equal to the unusable fuel supply as defined by § 3.437. Fuel gauges need not be provided for small auxiliary tanks which are used only to transfer fuel to other tanks, provided the relative size of the tanks, the rate of fuel transfer, and the instructions pertaining to the use of the tanks are adequate to guard against overflow and to assume that the crew will receive prompt warning in case transfer is not being achieved as intended.

28. By amending § 3.700 to read as follows:

§ 3.700 *Position light system.* If a position light system is installed, it shall be of a type certificated in accordance with Part 15 of this chapter, and shall comply with the pertinent provisions of that part.

29. By amending § 3.701 to read as follows:

§ 3.701 *Installation requirements.* The following installation requirements apply to single circuit systems and shall be complied with if this type system is installed.[1]

(a) *Forward and rear position lights.* Single circuit systems shall consist of an aviation red light, an aviation green light, and an aviation white light. The red and the green lights shall be referred to as forward position lights and shall be so installed that, with the airplane in normal flying position, the red light is displayed on the left side and the green light on the right side, each showing unbroken light between two vertical planes the dihedral angle of which is 110° when measured to the left and right, respectively, of the airplane from dead ahead. These lights shall be spaced laterally as far apart as practicable. The white light shall be referred to as a rear position light and shall be mounted as far aft as practicable and so installed that unbroken light is directed symmetrically aft in such a manner that the axis of the maximum cone of illumination is parallel to the flight path. In addition, the intersection of the two planes forming dihedral angle A given in Part 15 of the Civil Air Regulations shall be vertical.

(b) *Circuit.* The forward position lights and the rear white position light shall constitute the single circuit.

(c) *Position light flasher.* If installed, a position light flasher shall be of a type acceptable to the Administrator.

30. By deleting §§ 3.702 and 3.703.

31. By combining §§ 3.704 and 3.705 into one section (§ 3.704) to read as follows:

§ 3.704 *Riding light.* (a) When a riding (anchor) light is required for a seaplane, flying boat, or amphibian, it shall be capable of showing a white light for at least 2 miles at night under clear atmospheric conditions.

(b) The riding light shall be installed to show the maximum unbroken light practicable when the airplane is moored or drifting on the water. Externally hung lights shall be acceptable.

32. By amending § 3.715 to read as follows:

§ 3.715 *Safety belts.* Safety belts shall be of an approved type.

33. By adding a new sentence at the end of § 3.759 to read as follows:

§ 3.759 *Powerplant instruments.* * * * Ranges of engine speed which are restricted as a result of excessive engine or propeller vibration shall be marked with a red arc.

34. By amending § 3.780 (a) to read as follows:

§ 3.780 *Performance information.* (a) For airplanes with a maximum certificated take-off weight of more than 6,000 pounds, information relative to the items of performance set forth in subparagraphs (1) through (5) of this paragraph shall be included.

c. It is proposed to amend Part 4b, effective January 1, 1951, as follows:

1. By amending § 4b.632 to read as follows:

§ 4b.632 *Position light system.* The position light system shall be of the dual circuit type, shall be certificated in accordance with Part 15 of this chapter, and shall comply with the provisions of § 15.20 (b) of this chapter.

2. By renumbering § 4b.633 as § 4b.636 and by adding a new § 4b.633 to read as follows:

§ 4b.633 *Installation requirements.* The installation requirements of paragraphs (a) through (e) of this section apply to dual circuit systems:

(a) *Forward position lights.* Forward position lights shall consist of a red and green light spaced laterally as far apart as practicable and installed forward on an airplane in such a location that, with the airplane in normal flying position, the red light is displayed on the left side and the green light is displayed on the right side, each showing unbroken light between two vertical planes the dihedral angle of which is 110° when measured respectively to the left and to the right of the airplane from dead ahead.

(b) *Rear position lights.* Rear position lights shall consists of a red and a white light mounted as far aft as practicable, located in close proximity to each other, and installed so that unbroken light is directed symmetrically aft from each light with the axis of the maximum cone of illumination parallel to the flight path. In addition, the intersection of the two planes forming the dihedral angle A prescribed in Part 15 of the Civil Air Regulations shall be vertical.

(c) *Fuselage lights.* Fuselage lights shall consist of two white lights installed approximately in line with the forward position lights. One of these lights shall be mounted on the top of the fuselage, the other on the bottom. In the case of seaplanes, the location of the bottom fuselage light shall be subject to specific approval on each individual type airplane. The top and bottom fuselage lights shall show through approximately a hemisphere.

(d) *Circuits.* The forward position lights and the rear white position light shall be on one of the circuits, while the fuselage lights and the rear red position light shall be on the other.

(e) *Position light flasher.* An approved flasher for dual circuit systems shall be installed. The flasher shall actuate the system automatically so that the two circuits are energized alternately at an approved frequency. A switch shall be provided to disconnect the flasher from the circuit so that continuous light can be supplied by the forward position lights and the rear white position light, while the fuselage lights and the rear red position light are not illuminated.

d. It is proposed to revise Part 6, effective January 1, 1951, to read as follows:

PART 6—ROTOCRAFT AIRWORTHINESS

SUBPART A—GENERAL

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SUBPART A—GENERAL

APPLICABILITY AND DEFINITIONS

§ 6.0 *Applicability of this part.* This part establishes standards with which compliance shall be demonstrated for the issuance of type certificates for rotorcraft. This part, until superseded or rescinded, shall apply to all rotorcraft for which applications for type certification are made after the effective date of this part.

§ 6.1 *Definitions.* Unless otherwise noted, terms used in this part of the regulations are defined as follows:

(a) *Administration*—(1) *Administrator.* The Administrator is the Administrator of the Civil Aeronautics.

(2) *Applicant.* An applicant is a person or persons applying for approval of a rotorcraft or any part thereof.

(3) *Approved.* Approved, when used alone or as modifying terms such as means, devices, specifications, etc., shall mean approved by the Administrator.

(b) *Rotorcraft types*—(1) *Rotorcraft.* A rotorcraft is any aircraft deriving its principal lift from one or more rotors.

(2) *Helicopter.* A helicopter is a rotorcraft which depends principally for its support and motion in the air upon the lift generated by one or more power driven rotors, rotating on substantially vertical axes.

(3) *Gyroplane.* A gyroplane is a rotorcraft which depends principally for its support upon the lift generated by one or more rotors which are not power driven, except for initial starting, and which are caused to rotate by the action of the air when the rotorcraft is in motion. The propulsion is independent of the rotor system and usually consists of conventional propellers.

(4) *Gyrodyne.* A gyrodyne is a rotorcraft which depends principally for its support upon the lift generated by one or more rotors which are partially power driven, rotating on substantially vertical axes. The propulsion is indepedent of the rotor system and usually consists of conventional propellers.

(c) *General design*—(1) *Standard atmosphere.* The standard atmosphere is an atmosphere defined as follows:

(i) The air is a dry, perfect gas,

(ii) The temperature at sea level is 59° F.,

(iii) The pressure at sea level is 29.92 inches Hg.

(iv) The temperature gradient from sea level to the altitude at which the temperature equals −67° F. is −0.003566° F./ft. and zero thereabove.

(v) The density ρ_0 at sea level under the above conditions is 0.002378 pound sec^2/ft^4.

(2) *Maximum anticipated air temperature.* The maximum anticipated air temperature is a temperature specified for the purpose of compliance with the powerplant cooling standards. (See § 6.451.)

(3) *Aerodynamic coefficients.* Aerodynamic coefficients are nondimensional coefficients for forces and moments. They correspond with those adopted by the U. S. National Advisory Committee for Aeronautics.

(4) *Autorotation.* Autorotation is a rotorcraft flight condition in which the lifting rotor is driven entirely by the action of the air when the rotorcraft is in motion.

(5) *Autorotative landing.* An autorotative landing is any landing of a rotorcraft in which the entire maneuver is accomplished without the application of power to the rotor.

(6) *Autorotative landing distance.* Autorotative landing distance is the horizontal distance required to make an autorotative landing and come to a complete stop (to a speed of approximately 3 mph for seaplanes or floatplanes) from a height of 50 feet above the landing surface.

(7) *Ground resonance.* Ground resonance is the mechanical instability encountered when the rotorcraft is in contact with the ground.

(8) *Mechanical instability.* Mechanical instability is an unstable resonant condition due to the interaction between the rotor blades and the rotorcraft structure, while the rotorcraft is on the ground or airborne.

(d) *Weights*—(1) *Maximum weight.* The maximum weight of the rotorcraft is that maximum at which compliance with the requirements of this part of the Civil Air Regulations is demonstrated. (See § 6.101.)

(2) *Minimum weight.* The minimum weight of the rotorcraft is that minimum at which compliance with the requirements of this part of the Civil Air Regulations is demonstrated. (See § 6.101.)

(3) *Empty weight.* The empty weight of the rotorcraft is a readily reproducible weight which is used in the determination of the operating weights. (See § 6.104.)

(4) *Design maximum weight.* The design maximum weight is the maximum weight of the rotorcraft at which compliance is shown with the structural loading conditions. (See § 6.101.)

(5) *Design minimum weight.* The design minimum weight is the minimum weight of the rotorcraft at which compliance is shown with the structural loading conditions. (See § 6.101.)

(6) *Design unit weight.* The design unit weight is a representative weight used to show compliance with the structural design requirements:

(i) Gasoline 6 lbs. per U. S. gallon,

(ii) Lubricating oil 7.5 lbs. per U. S. gallon,

(iii) Crew and passengers 170 lbs. per person.

(e) *Speeds*—(1) *IAS.* Indicated air speed is equal to the pitot static airspeed indicator reading as installed in the rotorcraft without correction for air-speed indicator system errors but including the sea level standard adiabatic compressible flow correction. (This latter correction is included in the calibration of the air-speed instrument dials.) (See §§ 6.612 and 6.732.)

(2) *CAS.* Calibrated air speed is equal to the air-speed indicator reading corrected for position and instrument error. (As a result of the sea level adiabatic compressible flow correction to the air-speed instrument dial, CAS is equal to the true air speed TAS in standard atmosphere at sea level.)

(3) *EAS.* Equivalent air speed is equal to the air-speed indicator reading corrected for position error, instrument error, and for adiabatic compressible flow for the particular altitude. (EAS is equal to CAS at sea level in standard atmosphere.)

(4) *TAS.* True air speed of the rotorcraft relative to undisturbed air. $(TAS=EAS\ (P_0/\rho)^{1/2})$

(5) V_H. The Maximum speed obtainable in level flight with rated rmp. and power.

(6) V_{NE}. The never-exceed speed. (See § 6.711.)

(7) V_X. The speed for best angle of climb.

(8) V_Y. The speed for best rate of climb.

(f) *Structural*—(1) *Limit load.* A limit load is the maximum load anticipated in normal conditions of operation. (See § 6.200.)

(2) *Ultimate load.* An ultimate load is a limit load multiplied by the appropriate factor of safety. (See § 6.200.)

(3) *Factor of safety.* The factor of safety is a design factor used to provide for the possibility of loads greater than those anticipated in normal conditions of operation and for uncertainties in design. (See § 6.200.)

(4) *Load factor.* The load factor is the ratio of a specified load to the total weight of the rotorcraft; the specified load may be expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.

(5) *Limit load factor.* The limit load factor is the load factor corresponding with limit loads.

(6) *Ultimate load factor.* The ultimate load factor is the load factor corresponding with ultimate loads.

(7) *Fitting.* A fitting is a part or terminal used to join one structural member to another. (See § 6.307 (d).)

(g) *Power installation*[1]—(1) *Brake horsepower.* Brake horsepower is the power delivered at the propeller shaft of the engine.

(2) *Take-off power.* Take-off power is the brake horsepower developed under standard sea level conditions, under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for use in the normal take-off, and limited in use to a maximum continuous period as indicated in the approved engine specification.

(3) *Maximum continuous power.* Maximum continuous power is the brake horsepower developed in standard atmosphere at a specified altitude under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for use during periods of unrestricted duration.

(4) *Manifold pressure.* Manifold pressure is the absolute pressure measured at the appropriate point in the induction system, usually in inches of mercury.

(5) *Critical altitude.* The critical altitude is the maximum altitude at which in standard atmosphere it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:

(i) The maximum continuous power, in the case of engines for which this power rating is the same at sea level or at the rated altitude,

(ii) The maximum continuous rated manifold pressure, in the case of engines the maximum continuous power of which is governed by a constant manifold pressure.

(h) *Propellers and rotors*[2]—(1) *Rotor.* Rotor is a system of rotating airfoils.

(2) *Main rotor.* The main rotor is the main system of rotating airfoils providing sustentation for the rotorcraft.

(3) *Auxiliary rotor.* An auxiliary rotor is one which serves either to counteract the effect of the main rotor torque on the rotorcraft, or to maneuver the rotorcraft about one or more of its three principal axes.

[1] For engine airworthiness requirements see Part 13 of this chapter.

[2] For propeller airworthiness requirements see Part 14 of this chapter.

(4) *Axis of no feathering.* The axis of no feathering is the axis about which there is no first harmonic feathering or cyclic pitch variation.[3]

(5) *Plane of rotor disc.* The plane of rotor disc is a reference plane at right angles to the axis of no feathering.

(6) *Tip speed ratio.* The tip speed ratio is the ratio of the rotorplane flight velocity component in the plane of the rotor disc to the rotational tip speed of the rotor blades expressed as follows:

$$\mu = \frac{V \cos \alpha}{\Omega R}$$

where:

V = air speed of the rotorcraft along flight path (feet per second),

α = angle between projection in plane of symmetry of axis of no feathering and a line perpendicular to the flight path (radians, positive when axis is pointing aft),

Ω = angular velocity of rotor (radians per second),

R = rotor radius (feet).

(i) *Fire protection* — (1) *Fireproof.* Fireproof material means a material which will withstand heat at least as well as steel in dimensions appropriate for the purpose for which it is to be used. When applied to material and parts used to confine fires in designated fire zones, fireproof means that the material or part will perform this function under the most severe conditions of fire and duration likely to occur in such zones.

(2) *Fire-resistant.* When applied to sheet or structural members, fire-resistant material means a material which will withstand heat at least as well as aluminum alloy in dimensions appropriate for the purpose for which it is to be used. When applied to fluid-carrying lines, other flammable fluid system components, wiring, air ducts, fittings, and powerplant controls, this term refers to a line and fitting assembly, component, wiring or duct, or controls which will perform the intended functions under the heat and other conditions likely to occur at the particular location.

(3) *Flame-resistant.* Flame-resistant material means material which will not support combustion to the point of propagating, beyond safe limits, a flame after the removal of the ignition source.

(4) *Flash-resistant.* Flash-resistant material means material which will not burn violently when ignited.

(5) *Flammable.* Flammable pertains to those fluids or gases which will ignite readily or explode.

CERTIFICATION

§ 6.10 *Eligibility for type certificates.* A rotorcraft shall be eligible for type certification under the provisions of this part if it complies with the airworthiness provisions hereinafter established or if the Administrator finds that the provision or provisions not complied with are compensated for by other design features which provide an equivalent level of safety: *Provided,* That the Administrator finds no feature or characteristic of the rotorcraft which renders it unsafe.

§ 6.11 *Incorporation of this part in the type certificate.* (a) The provisions of this part, together with all amendments effective on the date of application for type certification, shall be considered as incorporated in the type certificate.

(b) The type certificate shall bear the legend set forth in subparagraph (1) of this paragraph:

(1) "The provisions of Part 6 of the Civil Air Regulations, together with all amendments thereto effective on the date of application for this certificate, are hereby incorporated herein and made a part hereof as though set forth in full, and, except as otherwise provided by the Board, or pursuant to § 6.24 by the Administrator, any amendment of the type design may, at the option of the holder of the type certificate, be accomplished in accordance with either the standards set forth in such regulations or with the standards in effect at the time the application for amendment is filed."

§ 6.12 *Amendment.* Unless otherwise specified, an amendment of this part shall be effective with respect to rotorcraft for which applications for type certificates are filed after the effective date of the amendment.

§ 6.13 *Type certificate.* An applicant shall be issued a type certificate when he demonstrates the eligibility of the rotorcraft by complying with the requirements of §§ 6.14 through 6.16 in addition to those contained in Part 1 of this chapter.

§ 6.14 *Data required.* The applicant for a type certificate shall submit to the Administrator such descriptive data, test reports, and computations as are necessary to demonstrate that the rotorcraft complies with the airworthiness requirements. The descriptive data shall be known as the type design and shall consist of drawings and specifications disclosing the configuration of the rotorcraft and all design features covered in the airworthiness requirements as well as sufficient information on dimensions, materials, and processes to define the strength of the structure. The type design shall describe the rotorcraft in sufficient detail to permit the airworthiness of subsequent rotorcraft of the same type to be determined by comparison with the type design.

§ 6.15 *Inspections and tests.* Inspections and tests shall include all those found necessary by the Administrator to insure that the rotorcraft complies with the applicable airworthiness requirements and conforms to the following:

(a) All materials and products are in accordance with the specifications in the type design,

(b) All parts of the airplane are constructed in accordance with the drawings in the type design,

(c) All manufacturing processes, construction, and assembly are such that the design strength and safety contemplated by the type design will be realized in service.

§ 6.16 *Flight tests.* After proof of compliance with the structural requirements contained in this part, and upon completion of all necessary inspections and testing on the ground, and proof of the conformity of the rotorcraft with the type design, and upon receipt from the applicant of a report of flight tests performed by him, the following shall be conducted:

(a) Such official flight tests as the Administrator finds necessary to determine compliance with the requirements of this part.

(b) After the conclusion of flight tests specified in paragraph (a) of this section, such additional flight tests as the Administrator finds necessary to ascertain whether there is reasonable assurance that the rotorcraft, its components, and equipment are reliable and function properly. The extent of such additional flight tests shall depend upon the complexity of the rotorcraft, the number and nature of new design features, and the record of previous tests and experience for the particular rotorcraft type, its components, and equipment. If practicable, these flight tests shall be conducted on the same rotorcraft used in the flight tests specified in paragraph (a) of this section and in the rotor drive endurance tests specified in § 6.412.

§ 6.17 *Airworthiness, experimental, and production certificates.* (For requirements with regard to these certificates see Part 1 of this chapter.)

§ 6.18 *Approval of materials, parts, processes, and appliances.* (a) Materials, parts, processes, and appliances shall be approved upon a basis and in a manner found necessary by the Administrator to implement the pertinent provisions of the Civil Air Regulations. The Administrator may adopt and publish such specifications as he finds necessary to administer this regulation, and shall incorporate therein such portions of the aviation industry, Federal, and military specifications respecting such materials, parts, processes, and appliances as he finds appropriate.

(b) Any material, part, process, or appliance shall be deemed to have met the requirements for approval when it meets the pertinent specifications adopted by the Administrator, and the manufacturer so certifies in a manner prescribed by the Administrator.

CHANGES

§ 6.20 *General.* When the type design is changed, the applicant or holder of the type certificate shall demonstrate that the rotorcraft complies with the applicable airworthiness requirements.

§ 6.21 *Classification of changes.* Changes shall be classified as minor and major. A minor change shall be one which has no appreciable effect on the weight, balance, structural strength, powerplant operation, flight characteristics, or other characteristic affecting the airworthiness of the rotorcraft. A major change shall be one not classified as a minor change.

§ 6.22 *Approval of minor changes.* Minor changes to type designs may be approved by an authorized representative of the Administrator prior to the submittal to the Administrator of any revised drawings.

[3] See NACA Technical Note No. 1604.

§ 6.23 *Approval of major changes.* Major changes to type designs shall be approved only after receipt by the Administrator of substantiating data and necessary descriptive data for inclusion in the type design.

§ 6.24 *Service experience changes.* (a) Where the Administrator finds as a result of service experience that an unsafe condition exists with respect to a design feature, part, or characteristic of any rotorcraft certificated under this part, he shall furnish notice [4] thereof to all operators of rotorcraft of that type, and the rotorcraft shall not thereafter be operated until the unsafe condition has been corrected, unless otherwise authorized by the Administrator under specified conditions and limitations:

(1) When the Administrator finds that design changes are necessary to correct the unsafe condition of the rotorcraft, the holder of the type certificate, upon request of the Administrator, shall submit appropriate design modifications for the approval of the Administrator.

(2) Upon approval, such changes shall be made a part of the type design of the type certificate, and descriptive data covering the changes shall be made available by the holder of the type certificate to all operators of rotorcraft previously certificated under such type certificate.

(3) All rotorcraft of the same type shall be modified in accordance with such amended type certificate.

(b) Where no current unsafe condition exists but the Administrator or the holder of the type certificate finds through service experience that changes in type design will contribute to the safety of the rotorcraft, the holder of the type certificate may submit appropriate design modifications for the approval of the Administrator. Upon approval of such modifications, the type design of the type certificate shall be amended accordingly, and all rotorcraft manufactured thereafter shall be modified in accordance with such amended type certificate. The manufacturer shall make available to all operators of the same type of rotorcraft information on the design modifications.

SUBPART B—FLIGHT

GENERAL

§ 6.100 *Proof of compliance.* (a) Compliance with the requirements prescribed in this subpart shall be established by flight or other tests conducted upon a rotorcraft of the type for which a certificate of airworthiness is sought or by calculations based on such tests, provided that the results obtained by calculations are equivalent in accuracy to the results of direct testing.

(b) Compliance with each requirement shall be established at all appropriate combinations of rotorcraft weight and center of gravity position within the range of loading conditions for which certification is sought by systematic investigation of all these combinations, except where compliance can be inferred reasonably from those combinations which are investigated.

(c) The controllability, stability, and trim of the rotorcraft shall be established at all altitudes up to the maximum anticipated operating altitude.

(d) The applicant shall provide a person holding an appropriate pilot certificate to make the flight tests, but a designated representative of the Administrator shall pilot the rotorcraft when it is found necessary for the determination of compliance with the airworthiness requirements.

(e) Official type tests shall be discontinued until corrective measures have been taken by the applicant when either:

(1) The applicant's test pilot is unable or unwilling to conduct any of the required flight tests, or

(2) It is found that requirements which have not been met are so substantial as to render additional test data meaningless or are of such a nature as to make further testing unduly hazardous.

(f) Adequate provision shall be made for emergency egress and for the use of parachutes by members of the crew during the flight tests.

(g) The applicant shall submit to the Administrator's representative a report covering all computations and tests required in connection with calibration of instruments used for test purposes and correction of test results to standard atmospheric conditions. The Administrator's representative shall conduct any flight tests which he finds necessary to check the calibration and correction report.

§ 6.101 *Weight limitations.* The maximum and minimum weights at which the rotorcraft will be suitable for operation shall be established as follows:

(a) Maximum weights shall not exceed any of the following:

(1) The weight selected by the applicant,

(2) The design weight for which the structure has been proven,

(3) The maximum weight at which compliance with all of the applicable flight requirements has been demonstrated.

(b) The maximum weight shall not be less than the sum of the weights of the following:

(1) The empty weight in accordance with § 6.104,

(2) 1 gallon of usable fuel for every 7 maximum continuous horsepower for which the rotorcraft is certificated,

(3) The full oil capacity,

(4) 170 pounds in all seats. Where in actual operation weights other than 170 pounds may affect adversely the balance and controllability of the rotorcraft, such weights shall be used in lieu of the 170 pounds. (See § 6.738 (a).)

(c) The minimum weight shall not be less than any of the following:

(1) The minimum weight selected by the applicant,

(2) The design minimum weight for which the structure has been proven,

(3) The minimum weight at which compliance with all of the applicable flight requirements has been demonstrated.

(d) The minimum weight shall not exceed the sum of the weights of the following:

(1) The empty weight in accordance with § 6.104,

(2) The minimum crew necessary to operate the rotorcraft assuming for each crew member the lowest of the following:

(i) 170 pounds,

(ii) Weight selected by the applicant,

(iii) Weight included in the loading instructions (see §§ 6.102 (b) and 6.738 (a)),

(3) 1 gallon of oil for each 100 maximum continuous horsepower for which the rotorcraft is certificated.

§ 6.102 *Center of gravity limitations.* (a) Center of gravity limits shall be established as the most forward position permissible for each weight established in accordance with § 6.101 and the most aft position permissible for each of such weights. Such limits of the center of gravity range shall not exceed any of the following:

(1) The extremes selected by the applicant,

(2) The extremes for which the structure has been proven,

(3) The extremes at which compliance with all of the applicable flight requirements has been demonstrated.

(b) Loading instructions shall be provided if the center of gravity position under any possible loading condition between the maximum and minimum weights as specified in § 6.101, with assumed weights for individual passengers and crew members variable over the anticipated range of such weights, lies beyond:

(1) The extremes selected by the applicant,

(2) The extremes for which the structure has been proven,

(3) The extremes for which compliance with all of the applicable flight requirements has been demonstrated. (See § 6.741 (c).)

§ 6.103 *Rotor limitations and pitch settings*—(a) *Power-on.* A range of power-on operating speeds for the main rotor(s) shall be established which will provide adequate margin to accommodate the variation of rotor rpm attendant to all maneuvers appropriate to the rotorcraft type and consistent with the type of synchronizer or governor used, if any (see §§ 6.713 (b) (2) and 6.714 (b)). A rotor blade high-pitch limiting device shall be provided and shall be positioned to prevent rotational speeds substantially less than the approved minimum rotor rpm in any flight condition with full throttle and with the pitch control of the main rotor(s) in the full high-pitch position.

(b) *Power-off.* A range of power-off operating rotor speeds shall be established which will permit execution of all autorotative flight maneuvers appropriate to the rotorcraft type throughout the range of air speeds and weights for which certification is sought (see §§ 6.713 (a) and 6.713 (b) (1)). A rotor blade low-pitch limiting device shall be positioned to provide rotational speeds within the

[4] Operators of rotorcraft are notified of any unsafe condition, of the required corrective action, and of compliance dates through the medium of airworthiness directives issued by the Administrator.

approved rotor speed range in any autorotative flight condition under the most adverse combinations of weight and air speed with the rotor pitch control in the full low-pitch position.

§ 6.104 *Empty weight.* (a) The empty weight, and the corresponding center of gravity position, shall be determined by weighing the rotorcraft. This weight shall exclude the weight of the crew and payload, but shall include the weight of all fixed ballast, the unusable fuel supply (see § 6.421), undrainable oil, total quantity of engine coolant, and total quantity of hydraulic fluid.

(b) The condition of the rotorcraft at the time of weighing shall be one which can be easily repeated and easily defined, particularly as regards the contents of the fuel, oil, and coolant tanks, and the items of equipment installed. (See § 6.740.)

§ 6.105 *Use of ballast.* Removable ballast may be used to enable the rotorcraft to comply with the flight requirements. (See §§ 6.391, 6.738, and 6.740.)

PERFORMANCE

§ 6.110 *General.* The performance information prescribed in §§ 6.111 through 6.114 shall be determined, and the rotorcraft shall comply with the corresponding requirement in the standard atmosphere in still air.

§ 6.111 *Take-off.* (a) The distance required to take off and climb over a 50-foot obstacle shall be determined under the following conditions:

(1) Most unfavorable combination of weight and center of gravity location,

(2) Engines operating within the approved limitations.

(b) The take-off shall be made in a manner such that a landing can be made safely at any point along the flight path in case of an engine failure and shall not require an exceptional degree of skill on the part of the pilot or exceptionally favorable conditions.

(c) The take-off distance obtained, the type of surface from which the take-off was made, the effect of temperature and altitude variations, and all other pertinent information shall be established. (See § 6.740.)

§ 6.112 *Climb.* (a) For all rotorcraft, the steady rate of climb at the best rate-of-climb speed with maximum continuous power and landing gear retracted shall be determined over the range of weights, altitudes, and temperatures for which certification is sought (see § 6.740). This rate of climb shall provide a steady angle of climb under standard sea level conditions of not less than 1:6.

(b) For multiengine helicopters, the steady angle of climb at maximum weight, with one engine inoperative and the remaining engine(s) operating at maximum continuous power, shall not be less than 1:20 under standard sea level conditions.

§ 6.113 *Minimum operating speed performance.* (a) Hovering ceilings for helicopters shall be determined under the following conditions over the range of weights, altitudes, and temperatures for which certification is sought:

(1) With take-off power and landing gear extended in the ground effect at a height above the ground consistent with normal take-off procedures,

(2) With maximum continuous power and landing gear extended out of the ground effect.

(b) At maximum weight, under standard atmospheric conditions, and under conditions prescribed in paragraph (a) (1) of this section, the hovering ceiling for helicopters shall not be less than 4,000 feet.

(c) For rotorcraft other than helicopters, the steady rate of climb at the minimum operating speed appropriate to the type with take-off power and landing gear extended shall be determined over the range of weights, altitudes, and temperatures for which certification is sought.

§ 6.114 *Landing.* The horizontal distance required to land and come to a complete stop (to a speed of approximately 3 mph for seaplanes or float planes) from a point at a height of 50 feet above the landing surface shall be determined in accordance with the following:

(a) The approach speed or speeds in the glide shall be appropriate to the type of rotorcraft and shall be chosen by the applicant.

(b) The approach and landing shall be entered from steady autorotation and shall be made in such a manner that its reproduction would not require an exceptional degree of skill on the part of the pilot or exceptionally favorable conditions.

(c) During the landing there shall be no excessive vertical acceleration and no tendency to bounce, nose over, ground loop, porpoise, or water loop.

(d) There shall be established for the landing the type of surface on which the landing was made, the effect of temperature and altitude variations, and all other pertinent information (see also § 6.743 (c)).

FLIGHT CHARACTERISTICS

§ 6.120 *General.* (a) The rotorcraft shall meet the requirements prescribed in this section and §§ 6.121 to 6.123 at all normally expected operating altitudes, under all critical loading conditions within the range of weight and center of gravity, and for all speeds, power, and rotor rpm conditions for which certification is sought.

(b) It shall be possible to make a smooth transition from one flight condition to another without requiring an exceptional degree of skill, alertness, or strength on the part of the pilot, and without danger of exceeding the limit load factor under all conditions of operation probable for the type, including those conditions normally encountered in the event of sudden powerplant failure.

(c) For night or instrument certification the rotorcraft shall have such additional flight characteristics as the Administrator finds are required for safe operation under those conditions.

§ 6.121 *Controllability.* (a) The rotorcraft shall be safely controllable and maneuverable during steady flight and during the execution of any maneuver appropriate to the type rotorcraft, including take-off, climb, level flight, turn, glide, and power-on or power-off landings.

(b) The margin of longitudinal and lateral cyclic control shall allow satisfactory pitching and rolling control at the maximum permissible forward speed with:

(1) Maximum weight,

(2) Critical center of gravity,

(3) Power on and power off,

(4) Critical rotor rpm.

(c) Compliance with paragraph (b) of this section shall include a demonstration with a power failure at V_H.

(d) There shall be established a wind velocity in which the rotorcraft can be operated without loss of control on or near the ground at the critical center of gravity and the critical rotor rpm in any maneuver appropriate to the type rotorcraft (e. g. cross-wind take-offs, sideward or rearward flight). This wind velocity shall not be less than 20 mph.

§ 6.122 *Trim.* It shall be possible in steady level flight at any speed appropriate to the type rotorcraft to trim the steady longitudinal and lateral control forces to zero. The trim device shall not introduce any undesirable discontinuities in the force gradients.

§ 6.123 *Stability*—(a) *General.* It shall be possible to fly the rotorcraft in normal maneuvers, including a minimum of three take-offs and landings, for a continuous period of time appropriate to the operational use of the particular type rotorcraft without the pilot experiencing undue fatigue or strain. In addition, the rotorcraft shall comply with the requirements of paragraph (b) of this section.

(b) *Static longitudinal stability.* In the following configurations the characteristics of the longitudinal cyclic control shall be such that, with constant throttle and collective pitch settings, a rearward displacement of longitudinal control shall be necessary to obtain and maintain speeds below the specified trim speed, and a forward displacement shall be necessary to obtain and maintain speeds above the specified trim speed for the ranges of altitude and rotor rpm for which certification is sought:

(1) *Climb.* The stick position curve shall have a stable slope from an increment of speed 15 percent of V_H below the best rate-of-climb speed to an increment of speed 20 percent of V_H above the best rate-of-climb speed, with:

(i) Critical weight and center of gravity,

(ii) Maximum continuous power,

(iii) Landing gear retracted,

(iv) Trim at the best rate-of-climb speed.

(2) *Cruise.* The stick position curve shall have a stable slope from 0.7 V_H to 1.1 V_H, with:

(i) Critical weight and center of gravity,

(ii) Power for level flight at 0.9 V_H,

(iii) Landing gear retracted,

(iv) Trim at 0.9 V_H.

(3) *Autorotation.* The stick position curve shall have a stable slope through-

out the speed range for which certification is sought, with:

(i) Critical weight and center of gravity,

(ii) Power off,

(iii) Landing gear both retracted and extended,

(iv) Trim at the speed for minimum rate of descent.

(4) *Hovering.* In the case of helicopters the stick position curve shall have a stable slope between the maximum approved rearward speed and a forward speed of 20 m. p. h. with:

(i) Critical weight and center of gravity,

(ii) Power required for hovering in still air,

(iii) Landing gear retracted,

(iv) Trim for hovering.

GROUND AND WATER HANDLING CHARACTERISTICS

§ 6.130 *General.* The rotorcraft shall demonstrate satisfactory ground and water handling characteristics. There shall be no uncontrollable tendencies in any operating condition reasonably expected for the type.

§ 6.131 *Ground resonance.* There shall be no uncontrollable tendency for the rotorcraft to oscillate when the rotor is turning and the rotorcraft is on the ground.

§ 6.132 *Spray characteristics.* For rotorcraft equipped with floats, the spray characteristics during taxying, take-off, and landing shall be such as not to obscure the vision of the pilot nor produce damage to the rotors, propellers, or other parts of the rotorcraft.

MISCELLANEOUS FLIGHT REQUIREMENTS

§ 6.140 *Flutter and vibration.* All parts of the rotorcraft shall be demonstrated to be free from flutter and excessive vibration under all speed and power conditions appropriate to the operation of the type rotorcraft. (See also §§ 6.203 (f) and 6.711.)

SUBPART C—STRUCTURE

GENERAL

§ 6.200 *Loads.* (a) Strength requirements of this subpart are specified in terms of limit and ultimate loads. Unless otherwise stated, the specified loads shall be considered as limit loads. In determining compliance with these requirements the specifications set forth in paragraphs (b) through (e) of this section shall be used.

(b) The factor of safety shall be 1.5 unless otherwise specified. The factor of safety shall apply to the external and inertia loads, unless its application to the resulting internal stresses is more conservative.

(c) Unless otherwise provided, the specified air, ground, and water loads shall be placed in equilibrium with inertia forces, considering all items of mass in the rotorcraft.

(d) All loads shall be distributed in a manner closely approximating or conservatively representing actual conditions.

(e) If deflections under load significantly change the distribution of external or internal loads, the redistribution shall be taken into account.

§ 6.201 *Strength and deformation.* (a) The structure shall be capable of supporting limit loads without suffering detrimental permanent deformations.

(b) At all loads up to limit loads the deformation shall be such as not to interfere with safe operation of the rotorcraft.

(c) The structure shall be capable of supporting ultimate loads without failure. It shall support the load for at least 3 seconds, unless proof of strength is demonstrated by dynamic tests simulating actual conditions of load application.

§ 6.202 *Proof of structure.* (a) Proof of compliance of the structure with the strength and deformation requirements of § 6.201 shall be made for all critical loading conditions.

(b) Proof of compliance by means of structural analysis shall be acceptable only when the structure conforms to types for which experience has shown such methods to be reliable. In all other cases substantiating tests shall be required.

(c) In all cases certain portions of the structure shall be tested as specified in § 6.300.

§ 6.203 *Structural and dynamic tests.* At least the following structural tests shall be conducted to show compliance with the strength criteria:

(a) Dynamic and endurance tests of rotors and rotor drives, including controls (see § 6.412),

(b) Control surface and system limit load tests (see § 6.323),

(c) Control system operation tests (see § 6.324),

(d) Vibration surveys (see §§ 6.221 and 6.250),

(e) Landing gear drop tests (see § 6.237),

(f) Ground vibration tests to determine the natural frequencies of the blades and major structural components of the rotorcraft,

(g) Such additional tests as may be found necessary by the Administrator to substantiate new and unusual features of the design.

§ 6.204 *Design Limitations.* The following values shall be established by the applicant for purposes of showing compliance with the structural requirements specified in this subpart:

(a) Maximum design weight,

(b) Power-on and power-off main rotor r. p. m. ranges (see §§ 6.103 and 6.713 through 6.714 (b)),

(c) Maximum forward speeds for the power-on and power-off rotor r. p. m. ranges established in accordance with paragraph (b) of this section (see § 6.711),

(d) Maximum rearward and sideward flight speeds,

(e) Extreme positions of rotorcraft center of gravity to be used in conjunction with the limitations of paragraphs (b), (c), and (d) of this section,

(f) Rotational speed ratios between the powerplant and all connected rotating components,

(g) Positive and negative limit maneuvering load factors.

FLIGHT LOADS

§ 6.210 *General.* Flight load requirements shall be complied with at all weights from the design minimum weight to the design maximum weight, with any practicable distribution of disposable load within prescribed operating limitations stated in the Rotorcraft Flight Manual (see § 6.741).

§ 6.211 *Flight load factors.* The flight load factors shall represent rotor load factors. The net load factor acting at the center of gravity of the rotorcraft shall be obtained by proper consideration of balancing loads acting in the specific flight conditions.

§ 6.212 *Maneuvering conditions.* The rotorcraft structure shall be designed for a positive maneuvering limit load factor of 3.5 and for a negative maneuvering limit load factor of 1.0, except that lesser values shall be allowed if the manufacturer shows by analytical study and flight demonstrations that the probability of exceeding the values selected is extremely remote. In no case shall the limit load factors be less than 2.5 positive and 0.5 negative. The resultant loads shall be assumed to be applied at the center(s) of the rotor hub(s) and to act in such directions as necessary to represent all critical maneuvering motions of the rotorcraft applicable to the particular type, including flight at the maximum design rotor tip speed ratio under power-on and power-off conditions.

§ 6.213 *Gust conditions.* The rotorcraft structure shall be designed to withstand the loading due to a vertical gust of 30 feet per second in velocity in conjunction with the critical rotorplane air speeds, including hovering.

CONTROL SURFACE AND SYSTEM LOADS

§ 6.220 *General.* The structure of all auxiliary rotors (antitorque and control), fixed or movable stabilizing and control surfaces, and all systems operating any flight controls shall be able to comply with the provisions of §§ 6.221 through 6.225.

§ 6.221 *Auxiliary rotor assemblies.* Auxiliary rotor assemblies shall be tested in accordance with the provisions of § 6.412 for rotor drives. In addition, auxiliary rotor assemblies with detachable blades shall be substantiated for centrifugal loads of twice those resulting when the rotor is driven by the engine at its maximum continuous speed. In the case of auxiliary rotors with highly stressed metal components, the vibration stresses shall be determined in flight, and it shall be demonstrated that these stresses do not exceed safe values for continuous operation.

§ 6.222 *Auxiliary rotor attachment structure.* The attachment structure for the auxiliary rotors shall be able to withstand a limit load equal to the maximum loads in the structure occurring under the flight and landing conditions.

§ 6.223 *Tail rotor guard.* When a tail rotor is provided on a rotorcraft it shall

not be possible for the tail rotor to contact the landing medium during a normal landing. If a tail rotor guard is provided which will contact the landing medium during landings and thus prevent tail rotor contact, suitable design loads for the guard shall be established, and the guard and its supporting structure shall be able to withstand the established loads.

§ 6.224 *Stabilizing and control surfaces.* Stabilizing and control surfaces shall be designed to withstand the critical loading from maneuvers or from combined maneuver and gust. In no case shall the limit load be less than 15 lbs. per square foot or a load due to C_N=0.55 at the maximum design speed. The load distribution shall simulate closely the actual pressure distribution conditions.

§ 6.225 *Primary control systems.* Manual control systems shall comply with the following:

(a) From the pilot compartment to the stops which limit the range of motion of the pilots' controls, the controls shall be designed to withstand the limit pilot applied forces as set forth in subparagraphs (1) through (3) of this paragraph, unless it is shown that the pilot is unable to apply such loads to the system. In the latter event the system shall be designed for the maximum loads which the pilot is able to apply, except that in any case values less than 0.60 of those specified shall not be employed.

(1) Foot type controls—130 pounds,

(2) Stick type controls—fore and aft 100 pounds—laterally 67 pounds,

(3) Wheel type controls—fore and aft 100 pounds—laterally 53-pound couple applied on opposite sides of the control wheel.

(b) From the stops to the attachment of the control system to the rotor blades (or control areas) the control system shall be designed to withstand the maximum loads which can be obtained in normal operation of the rotorcraft, except that where jamming, ground gusts, control inertia, or friction can cause loads exceeding operational loads, the system shall support without yielding 0.60 of the loads specified in subparagraphs (1), (2), and (3) of paragraph (a) of this section.

LANDING LOADS

§ 6.230 *Landing loads*—(a) *General.* The limit loads obtained in the landing conditions shall be considered as external forces which would occur in a rotorcraft structure if it were acting as a rigid body. In each of the conditions the external loads shall be placed in equilibrium with the linear and angular inertia forces in a rational or conservative manner. In applying the specified conditions the provisions of paragraphs (b) through (e) of this section shall be complied with.

(b) *Center of gravity positions.* The critical center of gravity positions within the certification limits shall be selected so that the maximum design loads in each of the landing gear elements are obtained.

(c) *Design weight.* The design weight used in the landing conditions shall not be less than the maximum weight of the rotorcraft less the weight of the rotor blades.

(d) *Load factor.* The structure shall be designed for a limit load factor not less than two-thirds of the value developed in the energy absorption tests specified in § 6.237, except in conditions in which other values of load factor are prescribed.

(e) *Landing gear position.* For landing gear arrangements where two wheels are located aft and one or more wheels are located forward of the center of gravity, the tires shall be assumed to be in their static position, and the shock absorbers shall be assumed to be in the most critical position unless otherwise prescribed.

§ 6.231 *Level landing conditions.* (a) Under loading conditions prescribed in paragraph (b) of this section, the rotorcraft shall be assumed to be in the following two level landing attitudes:

(1) All wheels contacting the ground simultaneously,

(2) The aft wheels contacting the ground while the forward wheel(s) being just clear of the ground.

(b) The following two level landing loading conditions shall be considered. Where the forward portion of the landing gear has two wheels, the total load applied to the forward wheels shall be divided between the two wheels in a 40:60 proportion:

(1) Vertical loads shall be applied in accordance with the provisions of § 6.230.

(2) The vertical loads specified in subparagraph (1) of this paragraph shall be combined with a drag load at each wheel. The drag loads shall not be less than 25 percent of the respective vertical loads.

§ 6.232 *Nose-up landing condition.* The rotorcraft shall be assumed in the maximum nose-up attitude permitting clearance of the ground by all parts of the rotorcraft. The ground loads shall be applied perpendicularly to the ground.

§ 6.233 *One-wheel landing condition.* The rotorcraft shall be assumed in the level attitude to contact the ground on one of the wheels located aft of the center of gravity. The vertical load shall be the same as that obtained on the one side in the condition specified in § 6.231 (b) (1). The unbalanced external loads shall be reacted by the inertia of the rotorcraft.

§ 6.234 *Side load landing conditions.* (a) The rotorcraft shall be assumed in the level landing attitude. The limit vertical and side loads shall be based upon load factors of 1.33 and 0.56 respectively. These loads shall be applied at the ground contact point, unless the landing gear is of the full-swivelling type in which case the loads shall be applied at the center of the axle. The conditions set forth in paragraphs (b) and (c) of this section shall be considered.

(b) Only the wheels aft of the c. g. shall be assumed to contact the ground. The vertical load shall be divided equally between the wheels. The side load shall be divided between the two wheels so that 60 percent of this load acts inboard on one wheel and 40 percent acts outboard on the other wheel.

(c) The forward and aft wheels shall be assumed to contact the ground simultaneously. The vertical and side loads on the aft wheels shall be divided in accordance with paragraph (a) of this section. Where the forward portion of the landing gear has two wheels, the loads applied to the forward wheels shall be divided between the two wheels in a 40:60 proportion.

§ 6.235 *Brake roll conditions.* The rotorcraft attitudes shall be assumed to be the same as those prescribed for the level landing conditions in § 6.231 (a), with the shock absorbers deflected to their static position. The limit vertical load shall be based upon a load factor of 1.33. A drag load equal to the vertical load multiplied by a coefficient of friction of 0.8 shall be applied at the ground contact point of each wheel equipped with brakes, except that the drag load need not exceed the maximum value based on limiting brake torque.

§ 6.236 *Taxying condition.* The rotorcraft and its landing gear shall be designed for loads which occur when the rotorcraft is taxied over the roughest ground which it is reasonable to expect in normal operation.

§ 6.237 *Energy absorption for landing conditions.* The landing gear shall be capable of absorbing the energy of a free drop from a height of 20 inches measured from the bottom of the tires to the ground, except that a lesser height shall be acceptable if the value chosen is shown to exceed by at least $\sqrt{1.5}$ the value corresponding with the greatest probable sinking speed of the rotorcraft at ground contact in power-off landings likely to be made by pilots of average skill. In no case shall the drop height be less than 12 inches. It shall be acceptable to neglect the weight of the rotor blades in the drop test. The maximum drop test acceleration developed at the c. g. of the rotorcraft shall be determined in this test.

§ 6.240 *Ski landing conditions.* The structure of a rotorcraft equipped with skis shall be designed in compliance with the loading conditions set forth in paragraphs (a) through (c) of this section:

(a) *Up load conditions.* (1) A vertical load of Pn and a horizontal load of $Pn/4$ shall be applied simultaneously at the pedestal bearings, P being the maximum static weight on each ski when the rotorcraft is loaded to the maximum design weight. The limit load factor n shall be determined in accordance with § 6.230 (d).

(2) A vertical load equal to 1.33 P shall be applied at the pedestal bearings. (For P see subparagraph (1) of this paragraph.)

(b) *Side load condition.* A side load of 0.35 Pn shall be applied in a horizontal plane perpendicular to the center line of the rotorcraft at the pedestal bearings. (For P see paragraph (a) (1) of this section.)

(c) *Torque load condition.* A torque load equal to 1.33 P (foot-pounds) shall be applied to the ski about the vertical axis through the center line of the pedestal bearings. (For P see paragraph (a) (1) of this section.)

§ 6.245 *Float landing conditions.* The structure of a rotorcraft equipped with floats shall be designed in compliance with the loading conditions set forth in paragraphs (a) and (b) of this section:

(a) *Up load conditions.* (1) With the rotorcraft assumed in the static level attitude a load shall be applied so that the resultant water reaction passes vertically through the center of gravity of the rotorcraft. The limit load factor shall be determined in accordance with § 6.230 (d).

(2) The vertical load prescribed in subparagraph (1) of this paragraph shall be applied together with an aft component equal to 0.25 the vertical component.

(b) *Side load condition.* The vertical load prescribed in paragraph (a) (1) of this section, divided equally between the floats, shall be applied together with a side component equal to 0.25 the total vertical load. The total side component shall be applied to one float only.

MAIN COMPONENT REQUIREMENTS

§ 6.250 *Main rotor structure.* The requirements of paragraphs (a) through (f) of this section shall apply to the main rotor assembles including hubs and blades.

(a) The hubs, blades, blade attachments, and blade controls which are subject to alternating stresses shall be designed to withstand repeated loading conditions. The stresses of critical parts shall be determined in flight in all attitudes appropriate to the type rotorcraft throughout the ranges of limitations prescribed in § 6.204. The service life of such parts shall be determined by fatigue tests or by other methods found acceptable by the Administrator.

(b) The main rotor structure shall be designed to withstand the critical flight loads prescribed in §§ 6.210 through 6.213.

(c) The main rotor structure shall be designed to withstand the limit loads prescribed in §§ 6.210 through 6.213 under conditions of autorotation necessary for normal operation. The rotor rpm used shall be such as to include the effects of altitude.

(d) The rotor blades, hubs, and flapping hinges shall be designed to withstand a loading condition simulating the force of the blade impact against its stop during operation on the ground.

(e) The rotor assembly shall be designed to withstand loadings simulating other critical conditions which might be encountered in normal operation.

(f) The rotor assembly shall be designed to withstand, at all rotational speeds including zero, the maximum torque likely to be transmitted thereto in both directions. If a torque limiting device is provided in the transmission system the design limit torque need not be greater than the torque defined by the limiting device, except that in no case shall the design limit torque be less than the limit torque specified in § 6.251 (c). The design torque shall be distributed to the rotor blades in a rational manner.

§ 6.251 *Fuselage, landing gear, and rotor pylon structure.* The requirements of paragraphs (a) through (c) of this section shall apply to the fuselage, landing gear, and rotor pylon structure:

(a) The structure shall be designed to withstand the critical loads prescribed in §§ 6.210 through 6.213. It shall be permissible to represent the resultant rotor force as a single force applied at the hub attachment point. The balancing and inertia loads occurring under the accelerated flight conditions as well as the thrust from auxiliary rotors shall be considered.

(b) The structure shall be designed to withstand the applicable ground loads prescribed in §§ 6.230 through 6.245.

(c) The engine mount and adjacent fuselage structure shall be designed to withstand loads occurring in the rotorcraft under the accelerated flight and landing conditions, including the effects of engine torque loads. In the case of engines having 5 or more cylinders, the limit torque shall be obtained by multipling the mean torque by a factor of 1.5. For 4-, 3-, and 2-cylinder engines the factors shall be 2, 3, and 4, respectively.

(d) The structure shall be designed to withstand the loads prescribed in § 6.250 (d) and (f).

EMERGENCY LANDING CONDITIONS

§ 6.260 *General.* The requirements of paragraphs (a) through (c) of this section deal with emergency conditions of landing on land or water in which the safety of the occupants shall be considered, although it is accepted that parts of the rotorcraft may be damaged.

(a) The structure shall be designed to give every reasonable probability that all of the occupants, if they make proper use of the seats, belts, and other provisions made in the design (see § 6.355), will escape serious injury in the event of a minor crash landing (with wheels up if the rotorcraft is equipped with retractable landing gear) in which the occupants experience the following ultimate inertia forces relative to the surrounding structure.

(1) Upward, 1.5*g* (Downward, 4.0g),

(2) Forward, 4.0*g*,

(3) Sideward, 2.0*g*.

(b) The use of a lesser value of the downward inertia force specified in paragraph (a) of this section shall be acceptable if it is shown that the rotorcraft structure can absorb the landing loads corresponding with the design maximum weight and an ultimate descent velocity of 5 fps without exceeding the value chosen.

(c) The inertia forces specified in paragraph (a) of this section shall be applied to all items of mass which would be apt to injure the passengers or crew if such items became loose in the event of a minor crash landing, and the supporting structure shall be designed to restrain these items.

SUBPART D—DESIGN AND CONSTRUCTION

GENERAL

§ 6.300 *Scope.* The rotorcraft shall not incorporate design features or details which experience has shown to be hazardous or unreliable. The suitability of all questionable design details or parts shall be established by tests.

§ 6.301 *Materials.* The suitability and durability of all materials used in the rotorcraft structure shall be established on the basis of experience or tests. All materials used in the rotorcraft structure shall conform to approved specifications which will insure their having the strength and other properties assumed in the design data.

§ 6.302 *Fabrication methods.* The methods of fabrication employed in constructing the rotorcraft structure shall be such as to produce a consistently sound structure. When a fabrication process such as gluing, spot welding, or heat treating requires close control to attain this objective, the process shall be performed in accordance with an approved process specification.

§ 6.303 *Standard fastenings.* All bolts, pins, screws, and rivets used in the structure shall be of an approved type. The use of an approved locking device or method is required for all such bolts, pins, and screws. Self-locking nuts shall not be used on bolts which are subject to rotation in operation.

§ 6.304 *Protection.* (a) All members of the structure shall be suitably protected against deterioration or loss of strength in service due to weathering, corrosion, abrasion, or other causes.

(b) Provision for ventilation and drainage of all parts of the structure shall be made where necessary for protection.

(c) In rotorcraft equipped with floats, special precautions shall be taken against corrosion from salt water, particularly where parts made from different metals are in close proximity.

§ 6.305 *Inspection provisions.* Means shall be provided to permit the close examination of those parts of the rotorcraft which require periodic inspection, adjustment for proper alignment and functioning, and lubrication of moving parts.

§ 6.306 *Material strength properties and design values.* (a) Material strength properties shall be based on a sufficient number of tests of material conforming to specifications to establish design values on a statistical basis.

(b) The design values shall be so chosen that the probability of any structure being understrength because of material variations is extremely remote.

(c) ANC–5a and ANC–18 values shall be used unless shown to be inapplicable in a particular case.[6]

(d) The structure shall be designed in so far as practicable to avoid points of stress concentration where variable stresses above the fatigue limit are likely to occur in normal service.

§ 6.307 *Special factors*—(a) *General.* Where there is uncertainty concerning the actual strength of a particular part of the structure, or where the strength is likely to deteriorate in service prior to

[6] ANC–5a, "Strength of Metal Aircraft Elements," and ANC–18, "Design of Wood Aircraft Structures," are published by the Army-Navy-Civil Committee on Aircraft Design Criteria and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

normal replacement of the part, or where the strength is subject to appreciable variability due to uncertainties in manufacturing processes and inspection methods, the factor of safety prescribed in § 6.200 (b) shall be multiplied by a special factor of a value such as to make the probability of the part being understrength from these causes extremely remote. The special factors set forth in paragraphs (b) through (d) of this section shall be used for this purpose.

(b) *Casting factors.* (1) Where only visual inspection of a casting is to be employed, the casting factor shall be 2.0, except that it need not exceed 1.25 with respect to bearing stresses.

(2) It shall be acceptable to reduce the factor of 2.0 specified in subparagraph (1) of this paragraph to a value of 1.25 if such a reduction is substantiated by testing at least three sample castings and if the sample castings as well as all production castings are visually and radiographically inspected in accordance with an approved inspection specification. During these tests the samples shall withstand the ultimate load multiplied by the factor of 1.25 and in addition shall comply with the corresponding limit load multiplied by a factor of 1.15.

(3) Casting factors other than those contained in subparagraphs (1) and (2) of this paragraph shall be acceptable if they are found to be appropriately related to tests and to inspection procedures.

(4) A casting factor need not be employed with respect to the bearing surface of a part if the bearing factor used (see paragraph (c) of this section) is of greater magnitude than the casting factor.

(c) *Bearing factors.* (1) Bearing factors shall be used of sufficient magnitude to provide for the effects of normal relative motion between parts and in joints with clearance (free fit) which are subject to pounding or vibration.

(2) A bearing factor need not be employed on a part if another special factor prescribed in this section is of greater magnitude than the bearing factor.

(d) *Fitting factors.* (1) A fitting factor of at least 1.15 shall be used on all fittings the strength of which is not proven by limit and ultimate load tests in which the actual stress conditions are simulated in the fitting and the surrounding structure. This factor shall apply to all portions of the fitting, the means of attachment, and the bearing on the members joined.

(2) In the case of integral fittings the part shall be treated as a fitting up to the point where the section properties become typical of the member.

(3) The fitting factor need not be employed where a type of joint made in accordance with approved practices is based on comprehensive test data, e. g. continuous joints in metal plating, welded joints, and scarf joints in wood.

(4) A fitting factor need not be employed with respect to the bearing surface of a part if the bearing factor used (see paragraph (c) of this section) is of greater magnitude than the fitting factor.

MAIN ROTOR

§ 6.310 *Main rotor blades; pressure venting and drainage.* Internal pressure venting of the main rotor blades shall be provided. Drain holes shall be provided and, in addition, the blades shall be designed to preclude the possibility of water becoming trapped in any section of the blade.

§ 6.311 *Stops.* The rotor blades shall be provided with stops, as required for the particular design, to limit the travel of the blades about their various hinges. Provision shall be made to keep the blades from hitting the droop stops except during the starting and stopping of the rotor.

§ 6.312 *Rotor and blade balance.* Rotors and blades shall be mass balanced to the degree necessary to prevent excessive vibrations and to safeguard against flutter at all speeds up to the maximum forward speed.

CONTROL SYSTEMS

§ 6.320 *General.* All controls and control systems shall operate with ease, smoothness, and positiveness appropriate to their function. (See also §§ 6.350 and 6.353.)

§ 6.321 *Control system stops.* (a) All control systems shall be provided with stops which positively limit the range of motion of the pilot's controls.

(b) Control system stops shall be so located in the system that wear, slackness, or take-up adjustments will not appreciably affect the range of travel.

(c) Control system stops shall be capable of withstanding the loads corresponding with the design conditions for the control system.

§ 6.322 *Control system locks.* If a device is provided for locking the control system while the rotorcraft is on the ground or water, the provisions of paragraphs (a) and (b) of this section shall apply.

(a) A means shall be provided to give unmistakable warning to the pilot when the locking device is engaged.

(b) Means shall be provided to preclude the possibility of the lock becoming engaged during flight.

§ 6.323 *Static tests.* Tests shall be conducted on control systems to show compliance with limit load requirements in accordance with the provisions of paragraphs (a) through (c) of this section:

(a) The direction of the test loads shall be such as to produce the most severe loading in the control system.

(b) The tests shall include all fittings, pulleys, and brackets used in attaching the control system to the main structure.

(c) Analyses or individual load tests shall be conducted to demonstrate compliance with the special factor requirements for control system joints subjected to angular motion. (See §§ 6.307 and 6.325.)

§ 6.324 *Operation tests.* An operation test shall be conducted for each control system by operating the controls from the pilot compartment with the entire system loaded to correspond with loads specified for the control system. In this test there shall be no jamming, excessive friction, or excessive deflection.

§ 6.325 *Control system details.* All details of control systems shall be designed and installed to prevent jamming, chafing, and interference from cargo, passengers, and loose objects. Precautionary means shall be provided in the cockpit to prevent the entry of foreign objects into places where they would jam the control systems. Provisions shall be made to prevent the slapping of cables or tubes against other parts of the rotorcraft.

§ 6.326 *Spring devices.* The reliability of any spring devices used in the control system shall be established by tests simulating service conditions, unless it is demonstrated that failure of the spring will not cause flutter or unsafe flight characteristics.

§ 6.327 *Autorotation control mechanism.* The main rotor blade pitch control mechanism shall be arranged to permit rapid entry into autorotative flight in the event of power failure.

LANDING GEAR

§ 6.335 *Wheels.* Landing gear wheels shall be of an approved type and shall have limit load ratings equal to or greater than the limit loads determined in accordance with §§ 6.230 through 6.237.

§ 6.336 *Brakes.* A braking device shall be installed, controllable by the pilot and usable during power-off landings, which is adequate to insure:

(a) Counteraction of any normal unbalanced torque when starting or stopping the rotor,

(b) Holding the rotorcraft parked on a 10° slope on a dry, smooth pavement.

§ 6.337 *Tires.* Landing wheel tires shall be of an approved type. The maximum static load rating of the tire shall not be less than the static ground reaction obtained at the wheel, assuming the maximum design weight concentrated at the most unfavorable center of gravity position.

§ 6.338 *Skis.* Skis shall be of an approved type. The approved rating of the skids shall not be less than the maximum weight of the rotorcraft on which they are installed.

§ 6.339 *Ski installation.* (a) When used, a ski installation shall include a trimming gear and a restraining gear.

(b) The trimming gear shall be designed to maintain the ski in an appropriate position during flight. It shall have sufficient strength to withstand the maximum aerodynamic and inertia loads to which the ski is subjected.

(c) The restraining gear and the structure to which it is attached shall be designed to withstand a vertical load equal to 0.8 times the static vertical load on the ski, applied first at the forward end of the flat portion of the ski and secondly at the aft end of the flat portion. The restraining gear shall limit the angular travel of the ski, with the shock absorber both in the extended and the fully compressed positions, to such values as will accommodate the position assumed by the ski in the conditions set

forth in subparagraphs (1) and (2) of this paragraph:

(1) When the rotorcraft encounters an uphill slope of 7.5° max. in a level attitude,

(2) When the rotorcraft encounters a downhill slope of 7.5° max. in a tail-down position.

FLOATS

§ 6.340 *Buoyancy (main floats).* (a) Main floats shall have a buoyancy in excess of that required to support the maximum weight of the rotorcraft in fresh water as follows:

(1) 50 percent in the case of single floats,

(2) 60 percent in the case of double floats.

(b) Main floats for use on rotorcraft of 2,500 pounds or more maximum weight shall contain at least 5 watertight compartments of approximately equal volume. Main floats for use on rotorcraft of less than 2,500 pounds maximum weight shall contain at least four such compartments.

§ 6.341 *Float strength.* Floats shall be designed for the conditions set forth in paragraphs (a) and (b) of this section:

(a) *Bag type floats.* Bag type floats shall withstand the maximum pressure differential which might be developed at the maximum altitude for which the rotorcraft is designed. In addition, the float shall withstand the maximum expected vertical load distributed along the length of the bag over three-quarters of the projected bag area.

(b) *Rigid floats.* Rigid type floats shall withstand the maximum expected vertical, horizontal, and side loads. An appropriate load distribution under critical conditions shall be used.

PERSONNEL AND CARGO ACCOMMODATIONS

§ 6.350 *Pilot compartment; general.* (a) The arrangement of the pilot compartment and its appurtenances shall provide safety and assurance that the pilot will be able to perform all of his duties and operate the controls in the correct manner without unreasonable concentration and fatigue.

(b) When provision is made for a second pilot, the rotorcraft shall be controllable with equal safety from both seats.

(c) The pilot compartment shall be constructed to prevent leakage likely to be distracting to the crew or harmful to the structure when flying in rain or snow.

(d) Vibration and noise characteristics of cockpit appurtenances shall not interfere with the safe operation of the rotorcraft.

§ 6.351 *Pilot compartment vision.* The pilot compartment shall be arranged to afford the pilot a sufficiently extensive, clear, and undistorted view for the safe operation of the rotorcraft. During flight in a moderate rain condition the pilot shall have an adequate view of the flight path in normal flight and landing, and have sufficient protection from the elements so that his vision is not unduly impaired. The pilot compartment shall be free of glare and reflections which would interfere with the pilot's vision. For rotorcraft intended for night operation, the demonstration of these qualities shall include night flight tests.

§ 6.352 *Pilot windshield and windows.* All glass panes shall be of a nonsplintering safety type.

§ 6.353 *Controls.* (a) All cockpit controls shall be located to provide convenience in operation and in a manner tending to prevent confusion and inadvertent operation. (See also § 6.737.)

(b) The controls shall be so located and arranged with respect to the pilots' seats that there exists full and unrestricted movement of each control without interference from either the cockpit structure or the pilots' clothing when seated. This shall be demonstrated for individuals ranging from 5′ 2″ to 6′ 0″ in height.

§ 6.354 *Doors.* Closed cabins shall be provided with at least one adequate and easily accessible external door. No passenger door shall be so located with respect to the rotor discs as to endanger persons using the door.

§ 6.355 *Seats and berths.* On rotorcraft, manufactured on or after the effective date of this part, all seats and berths, including their supporting structure shall be designed for the loads resulting from all specified flight and landing conditions, including the emergency landing conditions of § 6.260. Reactions from safety belts and harnesses shall be taken into account.

§ 6.356 *Cargo and baggage compartments.* (See also § 6.382.) (a) Each cargo and baggage compartment shall be designed for the placarded maximum weight of contents and the critical load distributions at the appropriate maximum load factors corresponding with all specified flight and ground load conditions, excluding the emergency landing conditions of § 6.260.

(b) Provisions shall be made to prevent the contents in the compartments from becoming a hazard by shifting under the loads specified in paragraph (a) of this section.

(c) Provisions shall be made to protect the passengers and crew from injury by the contents of any compartment when the ultimate inertia force acting forward is 4g.

§ 6.357 *Emergency exits.* (a) Closed cabins on rotorcraft carrying more than 5 persons shall be provided with an emergency exit. An additional exit or exits shall be provided where the total seating capacity is more than 15. Emergency exits shall comply with the provisions of subparagraphs (1) through (6) of this paragraph. (See also § 6.738 (c)):

(1) An emergency exit shall consist of a movable window or panel or of an additional external door which provides a clear and unobstructed opening, the minimum dimensions of which shall be such that a 19 by 26 inch ellipse may be completely inscribed therein.

(2) An exit shall be readily accessible, shall not require exceptional agility of a person using it, and shall be so located as to facilitate egress without crowding in all probable attitudes resulting from a crash.

(3) The method of opening an emergency exit shall be simple and obvious, and the exit shall be so arranged and marked as to be readily located and operated even in darkness.

(4) Reasonable provisions shall be made against the jamming of emergency exits as a result of fuselage deformation.

(5) The emergency exit, or second door, shall be on the opposite side of the cabin from the main door.

(6) The proper functioning of emergency exits shall be demonstrated by tests.

§ 6.358 *Ventilation.* The ventilating system for the pilot and passenger compartments shall be so designed as to preclude the presence of excessive quantities of fuel fumes and carbon monoxide. The concentration of carbon monoxide shall not exceed 1 part in 20,000 parts of air under conditions of forward flight or hovering in zero wind. For other conditions of operation, if the carbon monoxide concentration exceed this value, suitable operating restrictions shall be provided.

FIRE PREVENTION

§ 6.380 *General.* The fire prevention requirements of this subpart apply to personnel and cargo compartments. Additional fire prevention requirements are prescribed in Subpart E, Powerplant Installation, and Subpart F, Equipment.

§ 6.381 *Cabin interiors.* All compartments occupied or used by the crew or passengers shall comply with the provisions of paragraphs (a) through (c) of this section:

(a) The materials in no case shall be less than flash-resistant.

(b) The wall and ceiling linings, the covering of all upholstering, floors, and furnishings shall be flame-resistant.

(c) Compartments where smoking is to be permitted shall be equipped with ash trays of the self-contained type which are completley removable. All other compartments shall be placarded against smoking.

§ 6.382 *Cargo and baggage compartments.* Cargo and baggage compartments which are remote from the pilot compartment shall be completely lined with fire resistant material, except that additional lining of flame-resistant material may be employed.

§ 6.383 *Heating systems*—(a) *General.* Heating systems involving the passage of cabin air over or in close proximity to the exhaust manifold shall not be used unless adequate precautions are incorporated in the design to prevent the introduction of carbon monoxide into the cabin or pilot compartment.

(b) *Heat exchangers.* Heat exchangers shall be constructed of suitable materials, shall be cooled adequately under all conditions, and shall be capable of easy disassembly for inspection.

(c) *Combustion heaters.* Gasoline-operated combustion heaters shall be of an approved type and shall be installed so as to comply with the applicable sections of the powerplant installation requirements covering fire hazards and

precautions. All applicable requirements concerning fuel tanks, lines, and exhaust systems shall be considered. (See §§ 6.422 through 6.428 and 6.463.)

§ 6.384 *Fire protection of flight controls.* All primary flight controls passing through the engine compartment shall be constructed of fireproof material or shall be enclosed in a suitably ventilated and drained enclosure of 0.012-inch nominally thick stainless steel or material of equivalent fireproof qualities.

MISCELLANEOUS

§ 6.390 *Leveling marks.* Reference marks shall be provided for use in leveling the rotorcraft to facilitate weight and balance determinations on the ground.

§ 6.391 *Ballast provisions.* Ballast provisions shall be so designed and constructed as to prevent the inadvertent shifting of the ballast in flight. (See also §§ 6.105, 6.738, and 6.741 (c).)

SUBPART E—POWERPLANT INSTALLATION

GENERAL

§ 6.400 *Scope*—(a) *General.* The powerplant installation shall be considered to include all components of the rotorcraft which are necessary for its propulsion with the exception of the structure of the main and auxiliary rotors. It shall also be considered to include all components which affect the control of the major propulsive units or which affect their safety of operation between normal inspections or overhaul periods. (See §§ 6.604 and 6.613 for instrument installation and marking.) The requirements of paragraphs (b) through (d) of this section shall be applicable to all powerplants.

(b) All components of the powerplant installation shall be constructed, arranged, and installed in a manner which will assure their continued safe operation between normal inspections or overhaul periods.

(c) Accessibility shall be provided to permit such inspection and maintenance as is necessary to assure continued airworthiness.

(d) Electrical interconnections shall be provided to prevent the existence of differences of potential between major components of the powerplant installation and other portions of the rotorcraft.

§ 6.401 *Engine type certification.* All engines shall be type certificated in accordance with the provisions of Part 13 of this chapter.

§ 6.402 *Engine vibration.* The engine shall be installed to preclude harmful vibration of any of the engine parts or of any of the components of the rotorcraft. It shall be demonstrated by means of a vibration investigation that the addition of the rotor and the rotor drive system to the engine does not result in modification of engine vibration characteristics to the extent that the principal rotating portions of the engine are subjected to excessive vibratory stresses. It shall also be demonstrated that no portion of the rotor drive system is subjected to excessive vibratory stresses.

ROTOR DRIVE SYSTEM

§ 6.410 *Rotor drive mechanism.* The rotor drive mechanism shall incorporate a unit which will automatically disengage the rotor drive and engine from the main and auxiliary rotors in the event of power failure. The rotor drive mechanism shall be so arranged that all rotors necessary for control of the rotorcraft in autorotative flight will continue to be driven by the main rotor(s) after disengagement of the engine and rotor drive from the main and auxiliary rotors. If a torque limiting device is employed in the rotor drive system (see § 6.250 (f)), such device shall be located to permit continued control of the rotorcraft after it becomes operative.

§ 6.411 *Rotor brakes.* If a means is provided to control the rotation of the rotor drive system independent of the engine, the limitations on the use of such means shall be specified, and the control for this means shall be guarded to prevent inadvertent operation.

§ 6.412 *Rotor drive and control mechanism endurance tests.* (a) The rotor drive and control mechanism shall be tested for not less than 100 hours. The test shall be conducted on the rotorcraft, and the power shall be absorbed by the actual rotors to be installed, except that the use of other ground or flight test facilities with any other appropriate method of power absorption shall be acceptable provided that all conditions of support and vibration closely simulate the conditions which would exist during a test on the actual rotorcraft. The endurance tests shall include the tests required by paragraphs (b) through (g) of this section.

(b) A 60-hour portion of the endurance test shall be run at not less than the maximum continuous engine speed in conjunction with maximum continuous engine power. In this test the main rotor shall be set in the position which will give maximum longitudinal cyclic pitch change to simulate forward flight. The auxiliary rotor controls shall be in the position for normal operation under the conditions of the test.

(c) A 30-hour portion of the endurance test shall be run at not less than 90 percent of maximum continuous engine speed and 75 percent of maximum continuous engine power. The main and auxiliary rotor controls during this test shall be in the same position as prescribed in paragraph (b) of this section.

(d) A 10-hour portion of the endurance test shall be run at not less than take-off engine power and speed. The main and auxiliary rotor controls shall be in the normal position for vertical ascent during this test.

(e) The portions of the endurance test prescribed in paragraphs (b) and (c) of this section shall be conducted in intervals of not less than 30 minutes and may be accomplished either on the ground or in flight. The portion of the endurance test prescribed in paragraph (d) of this section may be conducted in intervals of 5 minutes or more.

(f) At intervals of not more than every 5 hours during the endurance tests prescribed in paragraphs (b), (c), and (d) of this section the engine shall be stopped rapidly enough to allow the engine and rotor drive to be automatically disengaged from the rotors.

(g) There shall be accomplished under the operating conditions specified in paragraph (b) of this section 500 complete cycles of lateral control and 500 complete cycles of longitudinal control of the main rotors, and 500 complete cycles of control of all auxiliary rotors. A complete control cycle shall be considered to involve movement of the controls from the neutral position, through both extreme positions, and back to the neutral position. The control cycling may be accomplished during the testing prescribed in paragraph (b) of this section or may be accomplished separately.

§ 6.413 *Additional tests.* Such additional dynamic, endurance, and operational tests or vibratory investigations shall be conducted as are found necessary by the Administrator to substantiate the airworthiness of the rotor drive mechanism.

§ 6.414 *Shafting critical speeds.* An investigation shall be made to determine that the critical speeds of all shafting lie outside the range of permissible engine speeds under idling, power-on, and autorotative conditions. It shall be demonstrated by actual operation that this condition is satisfied with the mechanism installed in the rotorcraft.

§ 6.415 *Shafting joints.* All universal joints, slip joints, and other shafting joints shall have provision for lubrication, unless it is demonstrated that lack of lubrication will have no adverse effect on the operation of the rotorcraft.

FUEL SYSTEM

§ 6.420 *Capacity and feed.* The usable fuel capacity shall not be less than 0.15 gallon per maximum continuous horsepower for which the rotorcraft is to be certificated. Gravity feed or mechanical pumping of fuel shall be employed. Air-pressure fuel systems shall not be allowed. The fuel supply system shall be arranged so that, in so far as practicable, the entire fuel supply can be utilized in the maximum inclinations of the fuselage for any sustained conditions of flight, and so that the feed ports will not be uncovered during normal maneuvers involving moderate rolling or sideslipping. The system shall also feed fuel promptly after one tank has run dry and another tank is turned on.

§ 6.421 *Unusable fuel supply.* The unusable fuel supply in each tank shall be that quantity at which the first evidence of malfunctioning occurs in any sustained flight condition at the most critical weight and center of gravity position within the approved limitations. The unusable fuel supply shall be determined for each tank used in normal operation. (See also §§ 6.104, 6.736, and 6.741 (e).)

§ 6.422 *Fuel tank construction and installation.* Fuel tanks shall be designed and installed in accordance with the provisions of paragraphs (a) through (e) of this section:

(a) Fuel tanks shall be capable of withstanding without failure all vibra-

tion, inertia, fluid, and structural loads to which they may be subjected in operation.

(b) Fuel tanks shall be capable of withstanding, without failure or leakage, an internal pressure equal to the pressure developed during the maximum limit acceleration with full tanks, except that in no case shall the minimum internal pressure be less than 3.5 lb./sq. in. for conventional type tanks or less than 2.0 lb./sq. in. for bladder type tanks.

(c) Fuel tanks of 10 gallons or greater capacity shall incorporate internal baffles unless external support is provided to resist surging.

(d) Fuel tanks shall be separated from the engine compartment by a fire wall. At least one-half inch clear air space shall be provided between the tank and fire wall.

(e) Spaces adjacent to the surfaces of fuel tanks shall be ventilated so that fumes cannot accumulate in the tank compartment in case of leakage. If two or more tanks have their outlets interconnected, they shall be considered as one tank. The air spaces in such tanks shall be interconnected to prevent the flow of fuel from one tank to another as a result of a difference in pressure in the respective tank air spaces.

§ 6.423 *Fuel tank details*—(a) *Expansion space.* Fuel tanks shall be provided with an expansion space of not less than 2 percent of the tank capacity. It shall not be possible to fill the fuel tank expansion space inadvertently when the rotorcraft is in the normal ground attitude.

(b) *Sump.* Each fuel tank shall incorporate a sump and drain located at the point in the tank which is the lowest when the rotorcraft is in the normal ground attitude. The main fuel supply shall not be drawn from the bottom of the sump.

(c) *Filler connection.* The design of fuel tank filler connections shall be such as to prevent the entrance of fuel into the fuel tank compartment or to any other portion of the rotorcraft other than the tank itself. (See also § 6.738 (b) (1).)

(d) *Vents.* Fuel tanks shall be vented from the top portion of the expansion space in such a manner that venting of the tank is effective under all normal flight conditions. The air vents shall be arranged to minimize the possibility of stoppage by dirt or ice formation.

(e) *Outlet.* Fuel tank outlets shall be provided with large-mesh finger strainers.

§ 6.424 *Fuel pumps.* If a mechanical pump is employed, an emergency pump shall also be installed to be available for immediate use in case of failure of the mechanical pump. Pumps of appropriate capacity may also be used for pumping fuel from an auxiliary tank to a main fuel tank. Mechanical pump systems shall be so arranged that they cannot feed from more than one tank at a time.

§ 6.425 *Fuel system lines and fittings.* (a) Fuel lines shall be installed and supported to prevent excessive vibration and to withstand loads due to fuel pressure and due to accelerated flight conditions.

(b) Fuel lines which are connected to components of the rotorcraft between which relative motion could exist shall incorporate provisions for flexibility.

(c) Flexible hose shall be of an approved type.

(d) All fuel lines and fittings shall be of sufficient size so that the fuel flow, with the fuel being supplied to the carburetor at the minimum pressure for proper carburetor operation, is not less than the following:

(1) For gravity feed systems: double the normal flow required to operate the engine at take-off power;

(2) For pump systems: 1.5 times the normal flow required to operate the engine at take-off power.

(e) A test for proof of compliance with the applicable flow requirements shall be conducted.

§ 6.426 *Valves.* A positive and quick-acting valve which will shut off all fuel to each engine individually shall be provided. The control for this valve shall be within easy reach of appropriate flight personnel. In the case of rotorcraft employing more than one source of fuel supply, provision shall be made for independent feeding from each source. The shutoff valve shall not be located closer to the engine than the remote side of the fire wall.

§ 6.427 *Strainers.* A strainer incorporating a sediment trap and drain shall be provided in the fuel system between the fuel tanks and the engine and shall be installed in an accessible position. The screen shall be easily removable for cleaning. If an engine-driven fuel pump is provided, the strainer shall be located between the fuel tank and the pump.

§ 6.428 *Drains.* One or more accessible drains shall be provided at the lowest point in the fuel system to drain completely all parts of the system when the rotorcraft is in its normal position on level ground. Such drains shall discharge clear of all parts of the rotorcraft and shall be equipped with safety locks to prevent accidental opening.

§ 6.429 *Fuel quantity indicator.* The fuel quantity indicator (see § 6.613 (b)) shall be installed to indicate clearly to the flight crew the quantity of fuel in each tank while in flight. When two or more tanks are closely interconnected by a gravity feed system and vented, and when it is impossible to feed from each tank separately, only one fuel quantity indicator need be installed. If exposed sight gauges are employed they shall be installed and guarded to preclude the possibility of breakage or damage.

OIL SYSTEM

§ 6.440 *General.* (a) Each engine shall be provided with an independent oil system capable of supplying the engine with an appropriate quantity of oil at a temperature not exceeding the maximum which has been established as safe for continuous operation. (For oil system instruments see §§ 6.604 and 6.735.)

(b) The usable oil capacity shall not be less than the product of the endurance of the rotorcraft under critical operating conditions and the maximum oil consumption of the engine under the same conditions, to which product a suitable margin shall be added to assure adequate circulation and cooling of the oil system. In lieu of a rational analysis of rotorcraft endurance and oil consumption, the total oil capacity of 1 gallon for each 30 gallons of fuel capacity shall be considered acceptable.

(c) The ability of the oil cooling provisions to maintain the oil inlet temperature to the engine at or below the maximum established value shall be demonstrated by flight tests.

§ 6.441 *Oil tank construction and installation.* Oil tanks shall be designed and installed in accordance with the provisions of paragraphs (a) through (e) of this section:

(a) Oil tanks shall be capable of withstanding without failure all vibration, inertia, fluid, and structural loads to which they may be subjected in operation.

(b) Oil tanks shall be capable of withstanding without failure or leakage an internal pressure of 5 lbs/sq. in.

(c) Oil tanks shall be provided with an expansion space of not less than 10 percent of the tank capacity, nor less than one-half gallon.

(d) Oil tanks shall be vented.

(e) Provision shall be made in the filler opening to prevent oil overflow from entering the compartment in which the oil tank is located. (See also § 6.738 (b) (2).)

§ 6.442 *Oil lines and fittings.* (a) Oil lines shall be supported to prevent excessive vibration.

(b) Oil lines which are connected to components of the rotorcraft between which relative motion could exist shall incorporate provisions for flexibility.

(c) Flexible hose shall be of an approved type.

(d) Oil lines shall have an inside diameter not less than the inside diameter of the engine inlet or outlet, and shall have no splices between connections.

§ 6.443 *Oil drains.* One or more accessible drains shall be provided at the lowest point in the oil system to drain completely all parts of the system when the rotorcraft is in its normal position on level ground. Such drains shall discharge clear of all parts of the rotorcraft and shall be equipped with safety locks to prevent accidental opening.

§ 6.444 *Oil quantity gauge.* An oil quantity indicator (see § 6.735) shall be installed to indicate during the filling operation the amount of oil in the oil tank.

§ 6.445 *Oil temperature indication.* A means shall be provided for measuring during flight the oil temperature at the engine inlet. If a separate oil system is provided for the main rotor drive, a means shall also be provided to give a warning in flight when the oil temperature has exceeded a safe value. (See § 6.604.)

§ 6.446 *Oil pressure indication.* If the main rotor drive incorporates an inde-

pendent oil pressure system, a means shall be provided to give a warning in flight when the oil pressure has fallen below a safe value.

COOLING SYSTEM

§ 6.450 *General.* The cooling system shall be capable of maintaining engine temperatures within safe operating limits under all conditions of flight during a period at least equal to that established by the fuel capacity of the rotorcraft, assuming normal engine power and speeds.

§ 6.451 *Cooling tests.* Compliance with the provisions of § 6.450 shall be demonstrated in flight tests in which engine temperature measurements are obtained under critical flight conditions. Such tests shall be conducted in air at temperatures corresponding with the maximum anticipated air temperatures as specified in paragraph (a) of this section. If the tests are conducted under conditions which deviate from the maximum anticipated air temperature, the recorded powerplant temperatures shall be corrected in accordance with the provisions of paragraphs (b) and (c) of this section. The corrected temperatures determined in this manner shall not exceed the maximum established safe values. The fuel used during the cooling tests shall be of the minimum octane number approved for the engines involved, and the mixture settings shall be those used in normal operation:

(a) *Maximum anticipated air temperature.* The maximum anticipated air temperature (hot day condition) shall be 100° F. at sea level, decreasing from this value at the rate of 3.6° F. per thousand feet of altitude above sea level until a temperature of −67° F. is reached above which altitude the temperature shall be constant at −67° F.

(b) *Correction factor for cylinder head and oil inlet temperatures.* The cylinder head and oil inlet temperatures shall be corrected by adding the difference between the maximum anticipated air temperature and the temperature of the ambient air at the time of the first occurrence of maximum cylinder head or oil inlet temperature recorded during the cooling test, unless a more rational correction is shown to be applicable.

(c) *Correction factor for cylinder barrel temperatures.* Cylinder barrel temperatures shall be corrected by adding 0.7 of the difference between the maximum anticipated air temperature and the temperature of the ambient air at the time of the first occurrence of the maximum cylinder barrel temperature recorded during the cooling test, unless a more rational correction is shown to be applicable.

§ 6.452 *Coolant system.* The coolant system for liquid-cooled engines shall be designed and installed in accordance with the provisions of paragraphs (a) through (d) of this section:

(a) *Filler openings.* Provision shall be made in coolant tank filler openings to prevent coolant overflow from entering the compartment in which the tank is located. (See also § 6.738 (b) (3).)

(b) *Lines.* Lines and connections shall conform to accepted standards and by their presence shall not induce vibration to the radiator or to the structure of the rotorcraft.

(c) *Radiators.* Radiators shall be so mounted as not to induce vibrations and strains causing distortion.

(d) *Drains.* One or more accessible drains shall be provided at the lowest point in any liquid coolant system to drain completely all parts of the system when the rotorcraft is in its normal position on level ground. Such drains shall discharge clear of all parts of the rotorcraft and shall be equipped with safety locks to prevent accidental opening.

INDUCTION AND EXHAUST SYSTEMS

§ 6.460 *General.* The induction and exhaust systems shall be designed in accordance with accepted practice.

§ 6.461 *Air induction.* (a) The engine air induction system shall be designed to supply the proper quantity of air to the engine under all conditions of operation.

(b) Cold air intakes shall open completely outside the cowling unless the emergence of backfire flames is positively prevented.

(c) Carburetor air intakes shall be provided with drains. The drains shall not discharge fuel in the possible path of exhaust flames.

§ 6.462 *Induction system de-icing and anti-icing provisions.* (a) The engine air induction system shall incorporate means for the prevention and elimination of ice accumulations. Unless it is demonstrated that this can be accomplished by other means, compliance with the following heat rise provisions shall be demonstrated in air free of visible moisture at a temperature of 30° F. when the engine is operating at 75 percent of its maximum continuous power.

(b) Rotorcraft equipped with sea level engines employing conventional venturi carburetors shall have a preheater capable of providing a heat rise of 90° F.

(c) Rotorcraft equipped with sea level engines employing carburetors which embody features tending to reduce the possibility of ice formation shall have a preheater capable of providing a heat rise of 70° F.

(d) Rotorcraft equipped with altitude engines employing conventional venturi carburetors shall have a preheater capable of providing a heat rise of 120° F.

(e) Rotorcraft equipped with altitude engines employing carburetors which embody features tending to reduce the possibility of ice formation shall have a preheater capable of providing a heat rise of 100° F., except that if a fluid deicing system is used the heat rise need not be greater than 40° F.

§ 6.463 *Exhaust manifolds.* (a) Exhaust manifolds shall be designed to provide for expansion, and shall be arranged and cooled so that local hot points cannot form.

(b) Exhaust manifolds shall be installed in accordance with the requirements of subparagraphs (1) through (3) of this paragraph:

(1) Exhaust manifolding shall be such that exhaust gases are discharged clear of cowling, rotorcraft structure, carburetor air intake, and fuel system parts or drains.

(2) Exhaust manifolding shall not be located immediately adjacent to or under the carburetor or fuel system parts unless such parts are protected against leakage.

(3) Exhaust manifolding shall be such that exhaust gases do not discharge in a manner which would impair pilot vision at night due to glare.

POWERPLANT CONTROLS AND ACCESSORIES

§ 6.470 *Powerplant controls; general.* The provisions of § 6.353 shall be applicable to all powerplant controls with respect to location and arrangement, and the provisions of § 6.737 shall be applicable to all powerplant controls with respect to marking. All flexible powerplant controls shall be of an approved type.

§ 6.471 *Throttle controls.* (a) A separate throttle control shall be provided for each engine. Throttle controls shall be grouped and arranged to permit separate control of each engine and also simultaneous control of all engines.

(b) Throttle controls shall afford a positive and immediately responsive means of controlling the engines.

§ 6.472 *Ignition switches.* (a) Means shall be provided for quickly shutting off all ignition by the grouping of switches or by providing a master ignition control.

(b) If a master ignition control is provided, a guard shall be incorporated to prevent inadvertent operation of the control.

§ 6.473 *Mixture controls.* If mixture controls are provided, a separate control shall be provided for each engine. The mixture controls shall be grouped and arranged to permit separate control of each engine and also simultaneous control of all engines.

§ 6.474 *Powerplant accessories.* Engine mounted accessories shall be of a type approved for installation on the engine involved, and shall utilize the provisions made on the engine for mounting.

POWERPLANT FIRE PROTECTION

§ 6.480 *General.* The powerplant installation shall be protected against fire in accordance with §§ 6.481 through 6.484. Additional fire prevention requirements are prescribed in Subpart D, Design and Construction, and Subpart F, Equipment.

§ 6.481 *Ventilation.* Compartments which include powerplant installation shall have provision for ventilation.

§ 6.482 *Shut-off means.* Means shall be provided to shut off the flow in all lines carrying flammable fluids into the engine compartment, except that a shut-off means need not be provided in lines forming an integral part of an engine. Provision shall be made to guard against inadvertent operation of the shut-off means, and to make it possible for the crew to reopen the shut-off means in flight after it has once been closed.

§ 6.483 *Fire wall.* (a) All engines, auxiliary power units, fuel-burning heat-

ers, and other combustion equipment which are intended for operation in flight shall be isolated from the remainder of the rotorcraft by means of fire walls, shrouds, or other equivalent means.

(b) Fire walls and shrouds shall be constructed in such a manner that no hazardous quantity of air, fluids, or flame can pass from the engine compartment to other portions of the rotorcraft.

(c) All openings in the fire wall or shroud shall be sealed with close fitting fireproof grommets, bushings, or fire-wall fittings.

(d) Fire walls and shrouds shall be constructed of fireproof material and shall be protected against corrosion.

§ 6.484 *Engine cowling and engine compartment covering.* (a) Cowling or engine compartment covering shall be constructed and supported so as to make it capable of resisting all vibration, inertia, and air loads to which it would be subjected in operation.

(b) Provision shall be made to permit rapid and complete drainage of all portions of the cowling or engine compartment in all normal ground and flight attitudes. Drains shall not discharge in locations which might cause a fire hazard.

(c) Cowling or engine compartment covering shall be constructed of fire-resistant material.

(d) Those portions of the cowling or engine compartment covering which would be subjected to high temperatures due to their proximity to exhaust system parts or exhaust gas impingement shall be constructed of fireproof material.

SUBPART F—EQUIPMENT

GENERAL

§ 6.600 *Scope.* The required basic equipment as prescribed in this subpart is the minimum which shall be installed in the rotorcraft for certification. Such additional equipment as is necessary for a specific type of operation is prescribed in the operating rules of the Civil Air Regulations.

§ 6.601 *Functional and installation requirements.* Each item of equipment installed in a rotorcraft shall be:

(a) Of a type and design appropriate to perform its intended function,

(b) Labeled as to its identification, function, or operational limitations, or any combination of these, whichever is applicable,

(c) Installed in accordance with specified limitations of the equipment,

(d) Demonstrated to function properly in the rotorcraft.

§ 6.602 *Required basic equipment.* The equipment listed in §§ 6.603 through 6.605 shall be the required basic equipment. (See §6.600.)

§ 6.603 *Flight and navigational instruments.* (See § 6.612 for installation requirements):

(a) Air-speed indicator (see § 6.612 (a)),

(b) Altimeter,

(c) Magnetic direction indicator (see § 6.612 (c)).

§ 6.604 *Powerplant instruments.* (See § 6.613 for installation requirements):

(a) For each engine or tank there shall be installed:

(1) A fuel quantity indicator (see § 6.613 (b)),

(2) An oil pressure indicator,

(3) An oil temperature indicator (see § 6.613 (g)),

(4) A carburetor air temperature indicator (see § 6.613 (f)),

(5) A tachometer to indicate engine rpm and rotor rpm for the main rotor, or for each main rotor the speed of which can vary appreciably with respect to another main rotor.

(b) For each engine or tank (if required in reference section) there shall be installed:

(1) A coolant temperature indicator, if liquid-cooled engines are used (see § 6.613 (h)),

(2) A cylinder head temperature indicator (see § 6.613 (e)),

(3) A fuel pressure indicator (if pump-fed engines are used),

(4) A manifold pressure indicator (if altitude engines are used),

(5) An oil quantity indicator (see § 6.613 (d)).

§ 6.605 *Miscellaneous equipment.* (a) Approved seats for all occupants (see § 6.355),

(b) Approved safety belts for all occupants (see § 6.643),

(c) Master switch arrangement (see §§ 6.623 and 6.624),

(d) Source(s) of electrical energy (see §§ 6.620 through 6.622), where such electrical energy is necessary for operation of the rotorcraft,

(e) Electrical protective devices (see § 6.625).

INSTRUMENTS; INSTALLATION

§ 6.610 *General.* The provisions of §§ 6.611 through 6.613 shall apply to the installation of instruments in rotorcraft.

§ 6.611 *Arrangement and visibility of instrument installations.* (a) Flight, navigation, and powerplant instruments for use by each pilot shall be easily visible to him.

(b) On multiengine rotorcraft, identical powerplant instruments for the several engines shall be so located as to prevent any confusion as to the engines to which they relate.

(c) The vibration characteristics of the instrument panel shall be such as not to impair seriously the readability or the accuracy of the instruments or to damage them.

§ 6.612 *Flight and navigational instruments*—(a) *Air-speed indicating system.* The air-speed indicating system shall be so installed that the air-speed indicator shall indicate true air speed at sea level under standard conditions to within an allowable installational error of not more than plus or minus 3 percent of the calibrated air speed or 5 mph, whichever is greater. The calibration shall be made in flight at all forward speeds of 10 mph or over. The allowable installation error shall not be exceeded at any forward speed of 20 mph and over. (See § 6.732.)

(b) *Static air-vent system.* All instruments provided with static air case connections shall be so vented that the influence of rotorcraft speed, the opening and closing of windows, air-flow variation, moisture, or other foreign matter will not seriously affect their accuracy.

(c) *Magnetic direction indicator.* The magnetic direction indicator shall be so installed that its accuracy shall not be excessively affected by the airplane's vibration or magnetic fields. After the direction indicator has been compensated, the installation shall be such that the deviation in level flight does not exceed 10° on any heading. A suitable calibration placard shall be provided as specified in § 6.733.

§ 6.613 *Powerplant instruments*—(a) *Instrument lines.* Instrument lines shall comply with the provisions of § 6.425. In addition, instrument lines carrying flammable fluids or gases under pressure shall be provided with restricted orifices or equivalent safety devices at the source of the pressure to prevent the escape of excessive fluid or gas in case of line failure.

(b) *Fuel quantity indicator.* Fuel quantity indicators shall be calibrated to read zero during level flight when the quantity of fuel remaining in the tank is equal to the unusable fuel supply as defined by § 6.421. (See also § 6.736.)

(c) *Fuel flowmeter system.* When a flowmeter system is installed, the metering component shall include a means for by-passing the fuel supply in the event that malfunctioning of the metering component results in a severe restriction to fuel flow.

(d) *Oil quantity indicator.* (1) A stick gauge or other equivalent means shall be provided to indicate the quantity of oil in each tank. (See § 6.735.)

(2) If an oil transfer system or a reserve oil supply system is installed, means shall be provided to indicate to the crew during flight the quantity of oil in each tank.

(e) *Cylinder head temperature indicator.* A cylinder head temperature indicator shall be provided for each engine or rotorcraft equipped with cooling shutters. In the case of rotorcraft which do not have cooling shutters, an indicator shall be provided if compliance with the provisions of § 6.451 is demonstrated in a condition other than the most critical cooling flight condition.

(f) *Carburetor air temperature indicating system.* A carburetor air temperature indicating system shall be provided for each engine equipped with a preheater which is capable of providing a heat rise in excess of 60° F.

(g) *Oil temperature indicator.* Means shall be provided to indicate to the appropriate members of the flight crew, during flight, the oil inlet temperature of each engine.

(h) *Coolant temperature indicator.* Means shall be provided to indicate to the appropriate members of the flight crew, during flight, the coolant outlet temperature of each liquid-cooled engine.

ELECTRICAL SYSTEMS AND EQUIPMENT

§ 6.620 *Installation.* (a) Electrical systems and equipment shall be free from hazards in themselves, in their method of operation, and in their effects on other parts of the rotorcraft. They shall be protected from fuel, oil, water, other detrimental substances, and from mechanical damage.

(b) The design of all components of the electrical system shall be appropriate for the intended use, and the components shall be capable of satisfactory operation over the entire range of environmental conditions encountered in the operation of the rotorcraft.

(c) Electrical sources of power shall have sufficient capacity during all normal flight operating conditions to supply maximum peaks and short-time and continuous electrical load requirements. For emergency operating conditions the capacity of electrical power sources shall be sufficient for all electrical loads necessary to permit a safe landing.

§ 6.621 *Batteries.* A battery or batteries shall be provided consistent with the needs of the electrical system in meeting the requirements of electrical power capacity. The installation shall provide adequate ventilation and drainage for the battery under all operating conditions, and means shall be provided to prevent corrosive battery substance from coming in contact with other parts of the rotorcraft during servicing or in flight.

§ 6.622 *Generator system*—(a) *Generator.* Sources of electrical power (including the battery) shall act coordinately, and shall also be capable of independent operation. The generator(s) shall be capable of delivering sufficient power to keep the batteries charged, and in addition shall provide for the normal electrical power requirements of the rotorcraft.

(b) *Generator controls.* Generator voltage control equipment shall be capable of regulating the generator output within rated limits.

(c) *Reverse current cut-off.* A generator reverse current cut-off shall disconnect the generator from the battery and from other generators when the generator is developing a voltage of such value that current sufficient to cause malfunctioning can flow into the generator.

§ 6.623 *Master switch.* A master switch arrangement shall be provided which will disconnect all sources of electrical power from the main distribution system at a point adjacent to the power sources.

§ 6.624 *Master switch installation.* The master switch or its controls shall be so installed that it is easily discernible and accessible to a member of the crew in flight.

§ 6.625 *Protective devices.* Protective devices (fuses or circuit breakers) shall be installed in the circuits to all electrical equipment, except that such items need not be installed in the main circuits of starter motors or in other circuits where no hazard is presented by their omission. If fuses are used, one spare of each rating or 50 percent spare fuses of each rating, whichever is the greater, shall be provided.

§ 6.626 *Protective devices installation.* Protective devices in circuits used in flight shall be conveniently located and properly identified to facilitate replacement of fuses or resetting of circuit breakers in flight.

§ 6.627 *Electric cables.* The electric cables used shall be in accordance with approved standards for aircraft electric cable of a slow-burning type. They shall have current-carrying capacity sufficient to deliver the necessary power to the items of equipment to which they are connected.

§ 6.628 *Switches.* Switches shall be capable of carrying their rated current. They shall be accessible to the crew and shall be labeled as to operation and the circuit controlled.

LIGHTS

§ 6.630 *Instrument lights.* (a) Instrument lights shall provide sufficient illumination to make all instruments, switches, etc., easily readable.

(b) Instrument lights shall be so installed that their direct rays are shielded from the pilot's eyes and so that no objectionable reflections are visible to him.

§ 6.631 *Landing lights.* (a) Landing and hovering lights shall be of an approved type.

(b) Landing lights shall be installed so that there is no objectionable glare visible to the pilot and so that the pilot is not adversely affected by halation.

(c) Landing lights shall be installed in a location where they provide the necessary illumination for night operation including hovering and landing.

(d) A switch for each light shall be provided, except that where multiple lights are installed at one location a single switch for the multiple lights shall be acceptable.

§ 6.632 *Position light system.* If a position light system is installed, it shall be of a type certificated in accordance with Part 15 of this chapter of the Civil Air Regulations, and shall comply with the pertinent provisions of that part.

§ 6.633 *Installation requirements.* The installation requirements of paragraphs (a) through (c) of this section apply to single circuit systems and shall be complied with if this type system is installed: *

(a) *Forward and rear position lights.* Single circuit systems shall consist of an aviation red light, an aviation green light, and an aviation white light. The red and the green lights shall be referred to as forward position lights and shall be so installed that, with the rotorcraft in normal flying position, the red light is displayed on the left side and the green light on the right side, each showing unbroken light between two vertical planes the dihedral angle of which is 110° when measured to the left and right, respectively, of the rotorcraft from dead ahead. These lights shall be spaced laterally as far apart as practicable. The white light shall be referred to as a rear position light, and shall be mounted as far aft as practicable and so installed that unbroken light is directed symmetrically aft in such a manner that the axis of the maximum cone of illumination is parallel to the forward flight path. In addition, the intersection of the two planes forming dihedral angle A given in Part 15 of this chapter shall be vertical.

(b) *Circuit.* The forward position lights and the rear white position light shall constitute the single circuit.

(c) *Position light flasher.* If installed, a position light flasher shall be of a type acceptable to the Administrator.

§ 6.636 *Riding light.* (a) When a riding (anchor) light is required for a rotorcraft operated from water, it shall be capable of showing a white light for at least 2 miles at night under clear atmospheric conditions.

(b) Riding lights shall be installed so that they will show a maximum practicable unbroken light when the rotorcraft is moored or drifting on the water. Externally hung lights shall be permitted.

SAFETY EQUIPMENT

§ 6.640 *General.* Required safety equipment which the crew is expected to operate at a time of emergency, such as flare and automatic life-raft releases, shall be readily accessible. (See also § 6.738 (e).)

§ 6.641 *Flares.* When parachute flares are required, they shall be of an approved type.

§ 6.642 *Flare installation.* (a) Parachute flares shall be releasable from the pilot compartment and installed to minimize the danger of accidental discharge.

(b) It shall be demonstrated in flight that the flare installation is such that ejection can be accomplished without hazard to the rotorcraft and its occupants.

(c) If recoil loads are involved in the ejection of the flares, the structure of the rotorcraft shall withstand such loads.

§ 6.643 *Safety belts.* Rotorcraft manufactured on or after the effective date of this part shall be equipped with safety belts approved in accordance with § 6.19. In no case shall the rated strength of the safety belt be less than that corresponding with the ultimate load factors specified, taking due account of the dimensional characteristics of the safety belt installation for the specific seat or berth arrangement. Safety belts shall be attached so that no part of the anchorage will fail at a load lower than that corresponding with the ultimate load factors specified. (See § 6.260.)

§ 6.644 *Emergency flotation and signaling equipment.* When emergency flotation and signaling equipment is required by the operating rules of the Civil Air Regulations, such equipment shall comply with the provisions of paragraphs (a) through (c) of this section.

* Installation requirements for dual circuit position light systems are contained in Part 4b of this chapter of the Civil Air Regulations.

(a) Rafts and life preservers shall be installed so as to be readily available to the crew and passengers.

(b) Rafts released automatically or released by the pilot shall be attached to the rotorcraft by means of a line to keep them alongside the rotorcraft.

(c) Signaling devices shall be free from hazard in their operation and shall be installed in an accessible location.

MISCELLANEOUS EQUIPMENT

§ 6.650 *Hydraulic systems*—(a) *Design.* Hydraulic systems and elements shall withstand, without exceeding the yield point, all structural loads which are expected to be imposed in addition to the hydraulic loads.

(b) *Tests.* Hydraulic systems shall be substantiated by proof pressure tests. When proof tested, no part of a hydraulic system shall fail, malfunction, or experience a permanent set. The proof load of any system shall be 1.5 times the maximum operating pressure of that system.

(c) *Accumulators.* Hydraulic accumulators or pressurized reservoirs shall not be installed on the engine side of the fire wall, except when they form an integral part of the engine.

SUBPART G—OPERATING LIMITATIONS AND INFORMATION

GENERAL

§ 6.700 *Scope.* (a) The operating limitations in §§ 6.710 through 6.718 shall be established as prescribed in this part.

(b) The operating limitations, together with any other information concerning the rotorcraft found necessary for safety during operation, shall be included in the Rotorcraft Flight Manual (§ 6.740), shall be expressed as markings and placards (§ 6.730), and shall be made available by such other means as will convey the information to the crew members.

OPERATING LIMITATIONS

§ 6.710 *Air-speed limitations; general.* When air-speed limitations are a function of weight, weight distribution, altitude, or other factors, the values corresponding with all critical combinations of these values shall be established.

§ 6.711 *Never-exceed speed* V_{NE}. (a) The never-exceed speed shall be established. It shall not be less than the maximum level flight speed with all engines operating at maximum continuous rpm and 90 percent of maximum continuous power, nor greater than either of the following:

(1) 0.9*V* established in accordance with § 6.204.

(2) 0.9 times the maximum speed demonstrated in accordance with § 6.140.

(b) It shall be permissible to vary the never-exceed speed with altitude and rotor rpm, provided that the ranges of these variables are sufficiently large to allow an operationally practical and safe variation of the never-exceed speeds.

§ 6.712 *Operating speed range.* An operating speed range shall be established for each rotorcraft.

§ 6.713 *Rotor speed.* Rotor r. p. m. limitations shall be established as set forth in paragraphs (a) and (b) of this section:

(a) *Maximum power off (autorotation).* Not to exceed 95 percent of the maximum design r. p. m. determined under § 6.204 (b) or 95 percent of the maximum r. p. m. demonstrated during the type tests (see § 6.103 (b)), whichever is lower.

(b) *Minimum*—(1) *Power off.* Not less than 105 percent of the higher of the following:

(i) The minimum demonstrated during the type tests (see § 6.103 (b)),

(ii) The minimum determined by design substantiation.

(2) *Power on.* Not less than the higher of the following:

(i) The minimum demonstrated during the type tests (see § 6.103 (a)),

(ii) The minimum determined by design substantiation and not higher than a value determined in compliance with § 6.103 (a).

§ 6.714 *Powerplant limitations.* The powerplant limitations set forth in paragraphs (a) through (c) of this section shall be established for the rotorcraft. They shall not exceed the corresponding limits established as a part of the type certification of the engine installed on the rotorcraft:

(a) *Take-off operation.* The take-off operation shall be limited by:

(1) The maximum rotational speed, which shall not be greater than the maximum value determined by the rotor design, nor greater than the maximum value demonstrated during type tests,

(2) The maximum permissible manifold pressure,

(3) The time limit upon the use of the corresponding power,

(4) The maximum allowable cylinder head, coolant outlet, or oil temperatures, if applicable when the time limit of subparagraph (3) of this paragraph exceeds two minutes.

(b) *Continuous operation.* The continuous operation shall be limited by:

(1) The maximum rotational speed, which shall not be greater than the maximum value determined by the rotor design, nor greater than the maximum value demonstrated during type tests,

(2) The minimum rotational speed demonstrated in compliance with the rotor speed requirements as prescribed in § 6.713 (b) (2).

(c) *Fuel octane rating.* The minimum octane rating of fuel shall be established for satisfactory operation of the powerplant within the limitations prescribed in paragraphs (a) and (b) of this section.

§ 6.715 *Limiting height for autorotative landing.* If a range of heights exists at any speed, including zero, within which it is not possible to make a safe landing following power failure, the range of heights and its variation with forward speed shall be established together with any other pertinent information, such as type of landing surface. (See § 6.741 (f).)

§ 6.716 *Rotorcraft weight and center of gravity limitations.* The rotorcraft weight and c. g. limitations to be established are those required to be determined by §§ 6.101 and 6.102.

§ 6.717 *Minimum flight crew.* The minimum flight crew shall be established by the Administrator as that number of persons which he finds necessary for safety in the operations authorized under § 6.718. This finding shall be based upon the work load imposed upon individual crew members with due consideration given to the accessibility and the ease of operation of all necessary controls by the appropriate crew members.

§ 6.718 *Types of operation.* The type of operation to which a rotorcraft is limited shall be established on the basis of flight characteristics and the equipment installed. (See the operating parts of the Civil Air Regulations.)

§ 6.719 *Maintenance manual.* The applicant shall furnish with each rotorcraft a maintenance manual to contain information which he considers essential for the proper maintenance of the rotorcraft. The maintenance manual shall include recommended limits on service life or retirement periods for major components of the rotorcraft.

MARKINGS AND PLACARDS

§ 6.730 *General.* (a) The markings and placards specified in §§ 6.731 through 6.738 are required for all rotorcraft.

(b) Markings and placards shall be displayed in conspicuous places and shall be such that they cannot be easily erased, disfigured, or obscured.

(c) Additional information, placards, and instrument markings having a direct and important bearing on safe operation of the rotorcraft shall be required when unusual design, operating, or handling characteristics so warrant.

§ 6.731 *Instrument markings; general.* (a) When markings are placed on the cover glass of the instrument, provision shall be made to maintain the correct alignment of the glass cover with the face of the dial.

(b) All arcs and lines shall be of sufficient width and so located that they are clearly visible to the pilot.

§ 6.732 *Air-speed indicator.* Instrument indications shall be in terms of indicated air speed. The markings set forth in paragraphs (a) through (c) of this section shall be used to indicate to the pilot the maximum and minimum permissible speeds and the normal precautionary operating ranges. (See § 6.612 (a).)

(a) A red radial line shall be used to indicate the limit beyond which operation is dangerous.

(b) A yellow arc shall be used to indicate the precautionary operating range.

(c) A green arc shall be used to indicate the safe operating range.

§ 6.733 *Magnetic direction indicator.* A placard shall be installed on or in close proximity to the magnetic direction indicator which shall comply with the requirements of paragraphs (a) through (c) of this section. (See § 6.612 (c).)

(a) The placard shall contain the calibration of the instrument in a level flight attitude with engine(s) operating.

(b) The placard shall state whether the calibration was made with radio receiver(s) on or off.

(c) The calibration readings shall be in terms of magnetic headings in not greater than 45° increments.

§ 6.734 *Powerplant instruments; general.* All required powerplant instruments shall be marked as required in paragraphs (a) through (c) of this section. (See § 6.613.)

(a) The maximum and the minimum (if applicable) safe operation limits shall be marked with red radial lines.

(b) The normal operating ranges shall be marked with a green arc not extending beyond the maximum and minimum safe operating limits.

(c) The take-off and precautionary ranges shall be marked with a yellow arc.

§ 6.735 *Oil quantity indicators.* Oil quantity indicators shall be marked in sufficient increments to indicate readily and accurately the quantity of oil. (See § 6.613 (d).)

§ 6.736 *Fuel quantity indicator.* When the unusable fuel supply for any tank exceeds 1 gallon or 5 percent of the tank capacity, whichever is the greater, a red arc shall be marked on the indicator extending from the calibrated zero reading to the lowest reading obtainable in the level flight attitude. (See §§ 6.421 and 6.613 (b).) A notation in the Rotorcraft Flight Manual shall be made to indicate that the fuel remaining in the tank when the quantity indicator reaches zero is not usable in flight. (See § 6.741 (g).)

§ 6.737 *Control markings; general.* (a) All cockpit controls including those referred to in paragraphs (b) and (c) of this section shall be plainly marked as to their function and method of operation. (See § 6.353.)

(b) *Powerplant fuel controls.* The powerplant fuel controls shall be marked as required by subparagraphs (1) through (4) of this paragraph.

(1) Controls for fuel tank selector valves shall be marked to indicate the position corresponding with each tank with all existing cross-feed positions.

(2) When more than one fuel tank is provided, and if safe operation depends upon the use of tanks in a specific sequence, the fuel tank selector controls shall be marked adjacent to or on the control to indicate to the flight personnel the order in which the tanks must be used.

(3) On multiengine rotorcraft, controls for engine valves shall be marked to indicate the position corresponding with each engine.

(4) The capacity of each tank shall be indicated adjacent to or on the fuel tank selector control.

(c) *Accessory and auxiliary controls.* Accessory and auxiliary controls shall be marked as required by subparagraphs (1) and (2) of this paragraph:

(1) Where visual indicators are essential to the operation of the rotorcraft (such as a rotor pitch or retractable landing gear indicator), they shall be marked in such a manner that the crew members at all times can determine the position of the unit.

(2) Emergency controls shall be colored red and shall be marked to indicate their method of operation.

§ 6.738 *Miscellaneous markings and placards*—(a) *Baggage compartments and ballast location.* Each baggage and cargo compartment as well as the ballast location shall bear a placard stating the maximum allowable weight of contents and, if applicable, any other limitation on contents found necessary due to loading requirements. When the maximum permissible weight to be carried in a seat is less than 170 pounds (see § 6.101 (b) (4)), a placard shall be permanently attached to the seat structure stating the maximum allowable weight of the occupant to be carried.

(b) *Fuel, oil, and coolant filler openings.* The information required by subparagraphs (1) through (3) of this paragraph shall be marked on or adjacent to the appropriate filler cover.

(1) The word "fuel", the minimum permissible fuel octane number for the engines installed, and the usable fuel tank capacity (see § 6.423 (c)),

(2) The word "oil" and the oil tank capacity. (See § 6.441 (e).)

(3) The name of the proper coolant fluid and the capacity of the coolant system. (See § 6.452 (a).)

(c) *Emergency exit placards.* Emergency exit placards and operating controls shall be colored red. A placard shall be located adjacent to the controls which clearly indicates the location of the exit and the method of operation. (See § 6.357.)

(d) *Operating limitation placard.* A placard shall be provided in clear view of the pilot stating: "This (helicopter, gyrodyne, etc.) must be operated in compliance with the operating limitations specified in the CAA approved Rotorcraft Flight Manual."

(e) *Safety equipment.* (1) Safety equipment controls which the crew is expected to operate in time of emergency, such as flares, automatic life raft releases, etc., shall be plainly marked as to their method of operation.

(2) When fire extinguishers and signaling and other life-saving equipment are carried in lockers, compartments, etc., these locations shall be marked accordingly.

ROTORCRAFT FLIGHT MANUAL

§ 6.740 *General.* (a) A Rotorcraft Flight Manual shall be furnished with each rotorcraft.

(b) The portions of the manual listed in §§ 6.741 through 6.744 as are appropriate to the rotorcraft shall be verified and approved and shall be segregated, identified, and clearly distinguished from portions not so approved.

(c) Additional items of information having a direct and important bearing on safe operation shall be required when unusual design, operating, or handling characteristics so warrant.

§ 6.741 *Operating limitations.* The operating limitations set forth in paragraphs (a) through (g) of this section shall be furnished with each rotorcraft:

(a) *Air-speed and rotor limitations.* Sufficient information shall include the information necessary for the marking of the limitations on or adjacent to the indicators as required. (See § 6.732.) In addition, the significance of the limitations and of the color coding used shall be explained.

(b) *Powerplant limitations.* Information shall be included to outline and to explain all powerplant limitations (see § 6.714) and to permit marking the instruments as required by §§ 6.734 through 6.736.

(c) *Weight and loading distribution.* The rotorcraft weights and center of gravity limits required by §§ 6.101 and 6.102 shall be included, together with the items of equipment on which the empty weight is based. Where the variety of possible loading conditions warrants, instructions shall be included to facilitate observance of the limitations.

(d) *Flight crew.* When a flight crew of more than one is required, the number and functions of the minimum flight crew determined in accordance with § 6.717 shall be described.

(e) *Type of operation.* The type(s) of operation(s) shall be listed for which the rotorcraft and its equipment installations have been approved. (See § 6.718.)

(f) *Limiting heights.* Sufficient information shall be included to outline the limiting heights and corresponding speeds for safe landing after power failure. (See § 6.715.)

(g) *Unusable fuel.* If the unusable fuel supply in any tank exceeds one gallon or 5 percent of the tank capacity, whichever is the greater, warning shall be provided to indicate to the flight personnel that the fuel remaining in the tank when the quantity indicator reads zero cannot be used safely in flight. (See § 6.421.)

§ 6.742 *Operating procedures.* The section of the manual devoted to operating procedures shall contain information concerning normal and emergency procedures and other pertinent information peculiar to the rotorcraft's operating characteristics which are necessary for safe operation.

§ 6.753 *Performance information.* Information relative to the items of performance set forth in paragraphs (a) through (d) of this section shall be included:

(a) The take-off distance and the air speed at the 50-foot height together with any pertinent information defining the flight path with respect to the required autorotative landing in the event of an engine failure, including the calculated effect of altitude and temperature. (See § 6.111 (c).)

(b) The steady rates of climb and hovering ceilings together with the corresponding air speeds and other pertinent information, including the calculated effect of altitude and temperature. (See §§ 6.112 and 6.113.)

(c) The autorotative landing distance and the type of landing surface together with any other pertinent information which might affect this distance, including the calculated effect of altitude and temperature. (See § 6.114.)

(d) Maximum wind allowable for safe operation near the ground. (See § 6.121 (d).)

§ 6.744 *Marking and placard information.* (See § 6.730.)

ROTORCRAFT IDENTIFICATION DATA

§ 6.750 *Identification plate.* A fireproof identification plate shall be securely attached to the structure in an accessible location where it will not likely be defaced during normal service. The identification plate shall not be placed in a location where it might be expected to be destroyed or lost in the event of an accident. The identification plate shall contain the identification data required by § 1.50 of this chapter.

§ 6.751 *Identification marks.* The nationality and registration marks shall be permanently affixed in accordance with the operating rules of the Civil Air Regulations.

e. It is proposed to amend Part 15, effective January 1, 1951, as follows:

1. By amending § 15.20 to read as follows:

§ 15.20 *Position light systems.* The position light systems for aircraft shall be one of the following types. The type to be used in a particular case shall be in accordance with requirements contained in the aircraft airworthiness or operational parts of the Civil Air Regulations.

(a) *Single circuit systems.* Single circuit systems shall conform to the rules set forth in subparagraphs (1) through (6) of this paragraph and may or may not incorporate a position light flasher:

(1) *General.* Single circuit systems shall consist of an aviation red light, an aviation green light, and an aviation white light. The red and green lights shall be spaced laterally as far apart as practicable and installed forward on an aircraft in such a location that, with the craft in normal flying position, the red light is displayed on the left side and the green light is displayed on the right side. These lights shall be referred to as forward position lights. The white light shall be mounted as far aft as practicable and shall be referred to as a rear position light.

(2) *Dihedral angles.* The forward and rear position lights shall show unbroken light within dihedral angles specified as follows:

(i) Dihedral angle L (left) shall be formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aircraft, and the other at 110° to the left of the first, when looking forward along the longitudinal axis.

(ii) Dihedral angle R (right) shall be formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aircraft, and the other at 110° to the right of the first, when looking forward along the longitudinal axis.

(iii) Dihedral angle A (aft) shall be formed by two intersecting vertical planes making angles of 70° to the right and 70° to the left, respectively, looking aft along the longitudinal axis, to a vertical plane passing through the longitudinal axis.

(3) *Position light flashers.* If installed, a position light flasher for a single circuit system shall be of a type acceptable to the Administrator.

(4) *Color specifications.* The colors of the position lights shall have the following International Commission on Illumination chromaticity coordinates:

(i) *Aviation red.*

y is not greater than 0.335,
z is not greater than 0.002;

(ii) *Aviation green.*

x is not greater than $0.440-0.320y$,
x is not greater than $y-0.170$,
y is not less than 0.390—0.170;

(iii) *Aviation white.*

x is not less than 0.350,
x is not greater than 0.540,
$y-y_o$ is not numerically greater than 0.01, y_o being the y coordinate of the Plankian radiator for $x_o=x$.

(5) *Light distribution and intensities.* The intensities prescribed in this section are those to be provided by new equipment with all filters and covers in place. Intensities shall be determined with the light source operating at a steady value equal to the average luminous output of the light source at the normal operating voltage of the aircraft. The light distribution and intensities of the position lights shall comply with the following requirements:

(i) *Forward position lights.* Each forward position light shall have an intensity of not less than three candles in all directions in dihedral angle L for the left light and in dihedral angle R for the right light. Within these dihedral angles the minimum permissible intensities in any plane through the longitudinal axis of the unit shall not be less than the following values within the angular limits noted:

Angles from longitudinal axis of unit:	*Intensity*
60 degrees	4 candles
80 degrees	8 candles

In all directions in dihedral angle L for the right light and in dihedral angle R for the left light, a tolerance of 10° shall be permissible in which the intensity of these lights shall be reduced to two candles or less. In these same directions an additional 10° shall be permissible in which the intensity shall be reduced to 0.5 candle or less. In all directions in dihedral angle A a tolerance of 10° shall be permissible in which the intensity of these lights shall be reduced to 0.5 candle or less. In all directions outside the specified dihedral angle and the permissible tolerance angles for each unit, the stray light intensity shall not exceed 0.5 candle.

(ii) *Rear position lights.* Each rear position light shall have an intensity of not less than 8 candles in all directions within dihedral angle A. In all directions in dihedral angles L and R, a tolerance of 20° shall be permissible in which the intensity of this light shall be reduced to 1 candle or less. In all directions outside the specified dihedral angle and the permissible tolerance angles, the stray light intensity shall not exceed 1 candle.

(6) *Light covers.* The lamps and reflectors shall be protected by a cover which shall be of a noncombustible material, shall be so constructed that it will not change color or shape, and will not cloud or suffer any considerable loss of transmission in normal use. The coloring of those portions which are intended to transmit light shall be completely diffused through the material.

(b) *Dual circuit systems.* Dual circuit systems shall conform to the rules set forth in subparagraphs (1) through (6) of this paragraph and shall incorporate a position light flasher.

(1) *General.* Dual circuit systems shall include, in addition to the lights specified for the single circuit system, two aviation white lights and one aviation red light. These lights will constitute the second circuit. The two white lights shall be installed approximately in line with the forward position lights. One of these lights shall be mounted on the top of the fuselage, the other on the bottom with both showing unbroken light through approximately a hemisphere. These lights shall be referred to as fuselage lights. In the case of seaplanes, the location of the bottom fuselage light shall be subject to specific approval on each individual type airplane. The red light shall be mounted as far aft as practicable and in close proximity to the white rear position light. It shall also be referred to as a rear position light.

(2) *Dihedral angles.* The dihedral angles for dual circuit systems are identical to those prescribed for the single circuit system in paragraph (a) (2) of this section.

(3) *Position light flashers.* Dual circuit position light flashers shall be of a type approved by the Administrator.

(4) *Color specifications.* The colors of the position lights for dual circuit systems shall be the same as those prescribed for single circuit systems in paragraph (a) (4) of this section.

(5) *Light distribution and intensities.* The intensities prescribed in this section are those to be provided by new equipment with all filters and covers in place. Intensities shall be determined with the light source operating at a steady value equal to the average luminous output of the light source at the normal operating voltage of the aircraft. The light distribution and intensities of the position lights shall comply with the following requirements.

(i) *Forward and rear position lights—(a) Intensities in horizontal plane.* The intensity in any direction in the horizontal plane shall not be less than the values given in Figure 15–2. (The horizontal plane is the plane containing the longitudinal axis and is perpendicular to the plane of symmetry of the airplane.)

(b) *Intensities above and below horizontal.* The intensity in any direction plane shall not be less than the appropriate value given in figure 15–3, where I is the minimum intensity prescribed in figure 15–2 for the direction in the horizontal plane determined by the intersection of the horizontal plane and the vertical plane for which the distribution is prescribed. (Vertical planes are planes perpendicular to the horizontal plane.)

(c) *Overlaps between adjacent signals.* The intensities in overlaps between

adjacent signals shall not exceed the values given in figure 15–4.

FIGURE 15-2—*Minimum intensities in the horizontal plane*

Dihedral angle	Angle from right or left of longitudinal axis, measured from dead ahead	Intensity
L and R	0° to 10°	40 candles.
	10° to 20°	30 candles.
	20° to 110°	20 candles.
A	110° to 180°	20 candles.

FIGURE 15-3—*Minimum intensities in any vertical plane*

Angle above or below horizontal	Intensity
0°	1.00 I
0° to 5°	.90 I
0° to 5°	.90 I
5° to 10°	.80 I
10° to 15°	.70 I
15° to 20°	.50 I
20° to 30°	.30 I
30° to 40°	.10 I
40° to 90°	At least 2 candles

FIGURE 15-4—*Maximum intensities in overlapping beams of forward and rear position lights*

Overlaps	Maximum intensity	
	Area A [1]	Area B [2]
Green in dihedral angle *L*.	10 candles	1 candle.
Red in dihedral angle *R*.	10 candles	1 candle.
Green in dihedral angle *A*.	5 candles	1 candle.
Red in dihedral angle *A*.	5 candles	1 candle.
Rear white or rear red in dihedral angle *L*.	5 candles	1 candle.
Rear white or rear red in dihedral angle *R*.	5 candles	1 candle.

[1] Area A represents the overlap in any plane bounded by two straight lines forming angles of 10° cos θ and 20° cos θ to the common boundary of the dihedral angles considered.

[2] Area B represents the overlap in any plane beyond 20° cos θ. θ is the angle of the plane to the horizontal plane.

(ii) *Fuselage lights.* The top and bottom fuselage lights shall each furnish illumination of an intensity equivalent to a 32-candlepower lamp installed in a reflector of high reflective properties and shall have a clear cover glass. These lights shall show through approximately a hemisphere.

(6) *Light covers.* The light covers for dual circuit systems are identical to those prescribed for the single circuit system in paragraph (a) (6) of this section.

[F. R. Doc. 50–8429; Filed, Sept. 26, 1950; 8:47 a. m.]

DEPARTMENT OF LABOR

Wage and Hour Division

[29 CFR, Part 526]

INDUSTRIES OF A SEASONAL NATURE

EXEMPTION OF EXCAVATING, HAULING, AND PROCESSING OF CRUSHED STONE BY BLUE STONE QUARRY, INC., ACUSHNET, BRISTOL COUNTY, MASS.; PRELIMINARY DETERMINATION

On July 8, 1940, the administrator of the Wage and Hour Division issued a determination (5 F. R. 2526) that the northern branch of the crushed stone industry is of a seasonal nature within the meaning of section 7 (b) (3) of the Fair Labor Standards Act of 1938 (52 Stat. 1063; 29 U. S. C. 207 (b) (3)) and Part 526 of the regulations issued thereunder (29 CFR Part 526).

Paragraph 8 of the above-mentioned determination provides that the determination was made without prejudice to a supplementary determination enlarging the scope of the northern branch of the industry as defined in the original determination by the inclusion therein of such plants or groups of plants, if any, as operate in the same manner and for the same reasons as the plants in the northern branch described in paragraphs 1 and 3 of that determination.

An application has been filed by Blue Stone Quarry, Inc., for a supplementary determination including its plant at Acushnet, Bristol County, Massachusetts in the northern branch of the industry.

It appears from the application of Blue Stone Quarry, Inc., that:

1. The plant at Acushnet, Bristol County, Massachusetts, normally shuts down for a period of approximately 6 months each year except for an insubstantial amount of production produced shortly before the main production season.

2. This plant is located near the counties included in the northern branch of the industry as described in the original determination, in the colder and generally more northerly part of the United States.

3. The plant ceases operations annually at a regularly recurring season of the year except for sales, maintenance, and similar work because the materials used are not available for excavation, handling, and processing in the form in which they must be excavated, handled and processed, i. e. as unfrozen ledges, and banks of blasted rock, because of climatic factors.

From the foregoing, it appears that this plant operates in the same manner and for the same reasons as the plants in the northern branch of the industry described in paragraphs 1 and 3 of the aforementioned determination.

Accordingly, upon consideration of the facts stated in the said application the Administrator hereby determines pursuant to § 526.5 (b) (2) of the regulations relating to industries of a seasonal nature (29 CFR 526.5 (b) (2)) that a prima facie case has been shown for enlarging the scope of the northern branch of the crushed stone industry, as defined in the determination of July 8, 1940, in accordance with paragraph 8 of that determination and pursuant to section 7 (b) (3) of the Fair Labor Standards Act of 1938 and § 526.3 (a) of Part 526, to include the crushed stone plant of Blue Stone Quarry, Inc. at Acushnet, Bristol County, Massachusetts.

If no objection and request for hearing is received within 15 days following the publication of this preliminary determination, the Administrator, pursuant to § 526.5 (b) (2) of the regulations will make a finding upon the prima facie case. Objections and requests for hearing from any interested person should be submitted in writing to the Wage and Hour and Public Contracts Divisions, Department of Labor Building, 14th Street and Constitution Avenue, NW., Washington 25, D. C. The application for exemption may be examined in Room 5118 at this address.

Signed at Washington, D. C., this 21st day of September 1950.

WM. R. MCCOMB,
Administrator, Wage and Hour and Public Contracts Divisions.

[F. R. Doc. 50–8417; Filed, Sept. 26, 1950; 8:45 a. m.]

NOTICES

DEPARTMENT OF THE TREASURY

Office of the Secretary

ASSIGNMENT OF FUNCTIONS UNDER REORGANIZATION PLAN 26 OF 1950

The following order was issued by the Secretary of the Treasury under date of July 31, 1950:

By virtue of the authority vested in me by Reorganization Plan No. 26 of 1950, it is directed that officers, employees, and agencies of the Treasury Department shall continue to perform the functions they were authorized to perform immediately prior to the effective date of the Reorganization Plan, and authorized regulations and procedures in effect immediately prior to the effective date of the Reorganization Plan shall continue in effect until changed by the appropriate authority.

[SEAL] JOHN W. SNYDER,
Secretary of the Treasury.

[F. R. Doc. 50–8433; Filed, Sept. 26, 1950; 8:48 a. m.]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[1778184]

NEVADA

NOTICE OF FILING OF PLAT OF SURVEY

SEPTEMBER 21, 1950.

Notice is given that the plats of original surveys of the following described lands, accepted June 17, 1947 will be officially filed in the Land and Survey Office, Reno, Nevada, effective at 10:00

a. m. on the 35th day after the date of this notice:

MOUNT DIABLO MERIDIAN

T. 9 N., R. 70 E.,
Secs. 1 to 36, inclusive.
T. 9½ N., R. 70 E.,
Sec. 31, lots 1, 2, 3, 4, 5, 6, E½SW¼, SE¼,
Sec. 32, lots 1, 2, 3, 4, SW¼, SE¼,
Sec. 33, lots 1, 2, 3, 4, SW¼, SE¼,
Sec. 34, lots 1, 2, 3, 4, SW¼, SE¼,
Sec. 35, lots 1, 2, 3, 4, SW¼, SE¼,
Sec. 36, lots 1, 2, 3, 4, SW¼, SE¼.
T. 9½ N., R. 71 E.,
Sec. 31, lots 1, 2, 3, 4, 5, 6, SW¼, W½SE¼.

The area described aggregates 25,995.37 acres.

Available data indicates that the lands are mountainous desert in character.

No application for these lands may be allowed under the homestead, small tract, desert land, or any other nonmineral public land laws, unless the land has already been classified as available or suitable for such type of application or shall be so classified upon consideration of an application.

According to the field notes and as shown by the plat, there is a spring of water in the W½SE¼ sec. 34, T. 9½ N., R. 70 E., M. D. M.

The legal subdivision containing the spring and the lands within a quarter of a mile thereof may be affected by the general withdrawal made by Executive order of April 17, 1926 (43 CFR 292.1), creating Public Water Reserve No. 107, but the question of whether the spring is of such size or value or so needed by the public as to bring the lands within the scope of the withdrawal is left for future determination.

At the hour and date specified above the said lands shall, subject to valid existing rights and the provisons of existing withdrawals, become subject to application, petition, location, or selection as follows:

(a) *Ninety-one day period for preference-right filings.* For a period of 91 days, commencing at the hour and on the day specified above, the public lands affected by this notice shall be subject only to (1) application under the homestead or the desert-land laws or the Small Tract Act of June 1, 1938, 52 Stat. 609 (43 U. S. C. 682a), as amended, by qualified veterans of World War II and other qualified persons entitled to preference under the act of September 27, 1944, 58 Stat. 747 (43 U. S. C. 279–284), as amended, subject to the requirements of applicable law, and (2) application under any applicable public-land law, based on prior existing valid settlement rights and preference rights conferred by existing laws or equitable claims subject to allowance and confirmation. Applications under subdivision (1) of this paragraph shall be subject to applications and claims of the classes described in subdivision (2) of this paragraph. All applications filed under this paragraph either at or before 10:00 a. m. on the 35th day after the date of this notice shall be treated as though filed simultaneously at that time. All applications filed under this paragraph after 10:00 a. m. on the said 35th day shall be considered in the order of filing.

(b) *Date for non-preference-right filings.* Commencing at 10:00 a. m. on the 126th day after the date of this notice, any lands remaining unappropriated shall become subject to such application, petition, location, selection, or other appropriation by the public generally as may be authorized by the public-land laws. All such applications filed either at or before 10:00 a. m. on the 126th day after the date of this notice, shall be treated as though filed simultaneously at the hour specified on such 126th day. All applications filed thereafter shall be considered in the order of filing.

A veteran shall accompany his application with a complete photostatic, or other copy (both sides), of his certificate of honorable discharge, or of an official document of his branch of the service which shows clearly his honorable discharge as defined in § 181.36 of Title 43 of the Code of Federal Regulations, or constitutes evidence of other facts upon which the claim for preference is based and which shows clearly the period of service. Other persons claiming credit for service of veterans must furnish like proof in support of their claims. Persons asserting preference rights, through settlement or otherwise, and those having equitable claims, shall accompany their applications by duly corroborated statements in support thereof, setting forth in detail all facts relevant to their claims.

Applications for these lands, which shall be filed in the Land and Survey Office, Reno, Nevada, shall be acted upon in accordance with the regulations contained in § 295.8 of Title 43 of the Code of Federal Regulations and Part 296 of that title, to the extent that such regulations are applicable. Applications under the homestead laws shall be governed by the regulations contained in Parts 166 to 170, inclusive, of Title 43 of the Code of Federal Regulations, and applications under the desert-land laws and the said Small Tract Act of June 1, 1938, shall be governed by the regulations contained in Parts 232 and 257, respectively, of that title.

Inquiries concerning these lands shall be addressed to the Manager, Land and Survey Office, Reno, Nevada.

WILLIAM ZIMMERMAN, Jr.,
Assistant Director.

[F. R. Doc. 50–8416; Filed, Sept. 26, 1950; 8:45 a. m.]

CIVIL AERONAUTICS BOARD

[Docket No. SA–218]

ACCIDENT OCCURRING AT BILLINGS MUNICIPAL AIRPORT, BILLINGS, MONT.

NOTICE OF HEARING

In the matter of investigation of accident involving aircraft of United States Registry N–93051, which occurred at Billings Municipal Airport, Billings, Montana, September 4, 1950.

Notice is hereby given, pursuant to the Civil Aeronautics Act of 1938, as amended, particularly section 702 of said act, in the above-entitled proceeding that hearing is hereby assigned to be held on Wednesday, September 27, 1950, at 9:00 a. m. in Room 342–6 Federal Office Building, First Avenue and Madison Street, Seattle, Washington.

Dated at Washington, D. C., September 21, 1950.

[SEAL] RUSSELL A. POTTER,
Presiding Officer.

[F. R. Doc. 50–8428; Filed, Sept. 26, 1950; 8:46 a. m.]

FEDERAL POWER COMMISSION

[Docket No. G–1476]

WARWICK GAS CORP.

NOTICE OF APPLICATION

SEPTEMBER 21, 1950.

Take notice that on September 11, 1950, Warwick Gas Corporation (Applicant), a New York corporation with its principal place of business in Florida, New York, filed an application pursuant to section 7 of the Natural Gas Act, as amended;

1. For an order directing the Home Gas Company to establish physical connection of its transmission facilities with the proposed facilities of and to sell and deliver natural gas to the Applicant; and

2. For a certificate of public convenience and necessity authorizing the Applicant to construct a regulating station in the town of Warwick and to construct from that point approximately 5,446 feet of 4-inch welded steel main pipeline along the Warwick-Florida highway into the village of Warwick, and approximately 15,630 feet of 2-inch pipe for service connections to customers located on all streets of the village.

Applicant proposes to furnish natural gas to a portion of the town of Warwick and to all of the village of Warwick, an incorporated community of about 4,000 population and 987 dwellings. It estimates its maximum demand for natural gas not to exceed 200,000 cubic feet in any 24-hour period, and states that the Home Gas Company, from whom it is seeking its supply, has included and allocated the approximate amount of its needs in statements before the Commission.

Applicant estimates the cost of construction and acquisition of the proposed facilities and the total over-all capital costs to be $118,581.50 and $150,000.00, respectively, and anticipates that there will be no cost of financing, as the total funds required will be made available by the sale of capital stock.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington 25, D. C., in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) before the 11th day of October 1950.

The application is on file with the Commission and is available for public inspection.

[SEAL] LEON M. FUQUAY,
Secretary.

[F. R. Doc. 50–8425; Filed, Sept. 26, 1950; 8:46 a. m.]

[Docket No. G-1479]

BANGOR GAS CO.

NOTICE OF APPLICATION

SEPTEMBER 21, 1950.

Take notice that on September 15, 1950, Bangor Gas Company (Applicant), a Pennsylvania corporation with its principal place of business in Bangor, Pennsylvania, filed an application pursuant to section 7 of the Natural Gas Act, as amended:

(1) For an order directing The Manufacturer's Light and Heat Company (Manufacturers) to establish physical connection of its natural-gas transportation facilities with the proposed lateral pipe line mentioned below of Applicant, and to sell and deliver natural gas to Applicant for resale in the Boroughs of Bangor, East Bangor, Roseto and Pen Argyl, Pennsylvania.

(2) For a certificate of public convenience and necessity authorizing the construction and operation of the lateral necessary to make the connection requested in paragraph (1) above; and

(3) For a certificate of public convenience and necessity authorizing the sale of natural gas by Applicant to Pen Argyl Gas Company for resale in Pen Argyl.

To accept the delivery of gas in accordance with paragraph (1) above, Applicant proposes to construct a lateral of 6-inch steel pipe for a distance of some 15,825 feet to the 14-inch natural-gas transmission line of Manufacturers, commonly known as the Coatesville-Port Jervis line. The cost of such lateral is estimated to be $38,833.

In support of its application, Applicant alleges that the introduction of natural gas into its system would substantially increase the capacity thereof, which would result in a capital investment saving for the years 1951–55 of some $60,267; that by purchasing some natural gas and peak shaving with its propane plant, it will save a total of $232,562 for the same five-year period; that 750 B. t. u. propane-air gas represents a greater public hazard than would be represented by natural gas; that the cost of propane gas has resulted in increased costs to the consumers, and its fluctuations in price have resulted in inconveniences to the public; and that, if it is successful in obtaining natural gas, it proposes to extend its service to the Borough of East Bangor, which is presently without gas service.

Applicant alleges further that for similar reasons its affiliate, Pen Argyl, desires to convert to the sale and distribution of natural gas, and that, to avoid a duplication of transmission line facilities, it desires to purchase such gas from Manufacturers for resale to Pen Argyl.

Applicant states further that in 1951 its needs will be approximately 202 Mcf of natural gas per day on a peak day, increasing to 425 Mcf in 1955; that it will need 55.5 Mcf to supply Pen Argyl in 1951, increasing to 116 Mcf in 1955; and that in total, Applicant needs on a peak day in 1951, 257.5 Mcf of natural gas, increasing to 541 Mcf in 1955.

Protests or petitions to intervene may be filed with the Federal Power Commission, Washington 25, D. C., in accordance with the rules of practice and procedure (18 CFR 1.8 or 1.10) before the 11th day of October 1950.

The application is on file with the Commission and is available for public inspection.

[SEAL] LEON M. FUQUAY,
Secretary.

[F. R. Doc. 50-8424; Filed, Sept. 26, 1950; 8:46 a. m.]

[Project No. 2016]

CITY OF TACOMA, WASHINGTON

ORDER POSTPONING DATE OF HEARING

SEPTEMBER 20, 1950.

On July 28, 1950, the Commission issued its order setting the application filed by the City of Tacoma, Washington, in the above-entitled matter for a public hearing on October 3, 1950. Numerous requests have been made for postponement of the date set in order to afford additional time to prepare for such hearing.

The Commission orders: The hearing in the above-entitled matter now set to commence on October 3, 1950, is hereby postponed to commence on November 2, 1950, at the same time and place specified in the order of the Commission adopted July 28, 1950.

Date of issuance: September 21, 1950.

By the Commission.

[SEAL] LEON M. FUQUAY,
Secretary.

[F. R. Doc. 50-8426; Filed, Sept. 26, 1950; 8:46 a. m.]

FEDERAL TRADE COMMISSION

[Docket No. 5693]

SEYDEL CHEMICAL CO. ET AL.

ORDER APPOINTING TRIAL EXAMINER

In the matter of Seydel Chemical Company, a corporation, Herman Seydel, C. H. Seydel, and Lawless E. West, individually and as officers of said corporation. Docket No. 5693.

This matter being at issue and ready for the taking of testimony and the receipt of evidence, and pursuant to authority vested in the Federal Trade Commission,

It is ordered, That Abner E. Lipscomb, a Trial Examiner of this Commission, be and he hereby is designated and appointed to take testimony and receive evidence in this proceeding beginning at a time and place to be later designated by him, and to perform all other duties authorized by law.

Issued: September 14, 1950.

By the Commission.

[SEAL] D. C. DANIEL,
Secretary.

[F. R. Doc. 50-8431; Filed, Sept. 26, 1950; 8:47 a. m.]

[Docket No. 5765]

AMERICAN PHARMACEUTICAL CO.

ORDER APPOINTING TRIAL EXAMINER

This matter being at issue and ready for the taking of testimony and the receipt of evidence, and pursuant to authority vested in the Federal Trade Commission.

It is ordered, That Abner E. Lipscomb, a Trial Examiner of this Commission, be and he hereby is designated and appointed to take testimony and receive evidence in this proceeding beginning at a time and place to be later designated by him, and to perform all other duties authorized by law.

Issued: September 14, 1950.

By the Commission.

[SEAL] D. C. DANIEL,
Secretary.

[F. R. Doc. 50-8432; Filed, Sept. 26, 1950; 8:47 a. m.]

SECURITIES AND EXCHANGE COMMISSION

[File No. 7-1245]

SUNRAY OIL CORP.

NOTICE OF APPLICATION FOR UNLISTED TRADING PRIVILEGES, AND OF OPPORTUNITY FOR HEARING

At a regular session of the Securities and Exchange Commission, held at its office in the city of Washington, D. C., on the 21st day of September A. D. 1950.

The Los Angeles Stock Exchange, pursuant to section 12 (f) (2) of the Securities Exchange Act of 1934 and Rule X-12F-1 thereunder, has made application for unlisted trading privileges in the 5½ percent Cumulative Convertible 2d Preferred Stock, $20 Par Value, of Sunray Oil Corporation, a security listed and registered on the New York Stock Exchange.

Rule X-12F-1 provides that the applicant shall furnish a copy of the application to the issuer and to every exchange on which the security is listed or already admitted to unlisted trading privileges. The application is available for public inspection at the Commission's principal office in Washington, D. C.

Notice is hereby given that, upon request of any interested person received prior to October 10, 1950, the Commission will set this matter down for hearing. In addition, any interested person may submit his views or any additional facts bearing on this application by means of a letter addressed to the Secretary of the Securities and Exchange Commission, Washington, D. C. If no one requests a hearing on this matter, this application will be determined by order of the Commission on the basis of the facts stated in the application, and other information contained in the official file of the Commission pertaining to this matter.

By the Commission.

[SEAL] ORVAL L. DUBOIS,
Secretary.

[F. R. Doc. 50-8418; Filed, Sept. 26, 1950; 8:45 a. m.]

[File No. 70-2438]

NEW ENGLAND PUBLIC SERVICE CO.

SUPPLEMENTAL ORDER PERMITTING DECLARATION TO BECOME EFFECTIVE AND AUTHORIZING SALE AND TRANSFER OF SHARES

At a regular session of the Securities and Exchange Commission held at its office in the city of Washington, D. C., on the 20th day of September A. D. 1950.

New England Public Service Company ("NEPSCO"), a registered holding company and a subsidiary of Northern New England Company, also a registered holding company, having filed a declaration under section 12 (d) of the Public Utility Holding Company Act of 1935 ("the act") proposing the sale at competitive bidding of 260,000 shares of NEPSCO's holdings of the common stock of its subsidiary, Central Maine Power Company ("Central Maine"), the proceeds to be applied toward the reduction of NEPSCO's outstanding bank loan; and

The Commission having by order dated September 8, 1950, permitted said declaration, as then amended, to become effective subject to the conditions that the proposed sale of common stock not be consummated until the results of competitive bidding pursuant to Rule U-50 shall have been made a matter of record in this proceeding and a further order entered by the Commission in the light of the record as so completed, and subject to a reservation of jurisdiction with respect to the payment of all fees and expenses incurred or to be incurred in connection with legal and accounting services applicable to the proposed transactions; and

NEPSCO having filed a further amendment to its declaration setting forth that it had requested bids for said common stock, and that in response to such invitation the following bids were received:

Bidder:	Price to company (per share)
Harriman Ripley and Co., Inc	$15.34
The First Boston Co. and Coffin & Burr, Inc	15.27
Blyth & Co., Inc. and Kidder, Peabody & Co	14.459

The amendment further stating that NEPSCO has accepted the bid submitted by Harriman Ripley & Co., Incorporated and that the purchaser proposes to offer said shares to the public at $16.25 per share resulting in an underwriters' spread of $0.91 per share; and

David J. Greene, et al., Committee for Common Stockholders of NEPSCO and Shareholders of Northern, having appeared and having been heard in opposition to the entry of an order permitting the proposed sale at the price stated above, and the Commission having examined the amendment herein filed on September 20, 1950, and having considered the record herein and the arguments of the Greene Committee; and

The Commission finding that the Greene Committee's objections should be overruled, that no terms or conditions should be imposed with respect to the consideration to be received for such sale or the underwriters' spread in connection therewith, and that the declaration as amended should be permitted to become effective forthwith, subject to the terms and conditions stated below; and

The record not having been completed with respect to payment of fees and expenses in connection with legal and accounting services applicable to the proposed transaction; and

NEPSCO having requested that our order herein contain appropriate recitals with respect to the sale and transfer of the Central Maine stock conforming to the requirements of Supplement R and section 1808 (f) of the Internal Revenue Code, as amended; and it appearing appropriate to grant such request:

It it ordered, That the jurisdiction heretofore reserved to consider the results of competitive bidding with respect to the sale of said stock be, and hereby is, released and that said declaration, as amended, be, and hereby is, permitted to become effective forthwith, subject to the terms and conditions prescribed by Rule U-24, and to the further condition that the jurisdiction heretofore reserved with respect to legal and accounting fees and expenses in connection with the sale of said common stock be and the same hereby is continued.

It is further ordered and recited, That the sale and transfer for cash by NEPSCO of 260,000 shares of the Common Stock, $10 par value, of Central Maine Power Company are necessary or appropriate to the simplification of the New England Public Service Company Holding Company System, are necessary or appropriate to effectuate the provisions of section 11 (b) of the Public Utility Holding Company Act of 1935, and are hereby authorized, approved and directed.

By the Commission.

[SEAL] ORVAL L. DUBOIS, *Secretary.*

[F. R. Doc. 50-8419; Filed, Sept. 26, 1950; 8:45 a. m.]

DEPARTMENT OF JUSTICE

Office of Alien Property

AUTHORITY: 40 Stat. 411, 55 Stat. 839, Pub. Laws 322, 671, 79th Cong., 60 Stat. 50, 925; 50 U. S. C. and Supp. App. 1, 616; E. O. 9193, July 6, 1942, 3 CFR, Cum. Supp., E. O. 9567, June 8, 1945, 3 CFR, 1945 Supp., E. O. 9788, Oct. 14, 1946, 11 F. R. 11981.

[Vesting Order 15073]

EUGENIO STANGER

In re: Bonds owned by and debt owing to Eugenio Stanger. F-28-23552-A-1.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Eugenio Stanger, on or since the effective date of Executive Order 8389, as amended, and on or since December 11, 1941, has been a resident of Germany and is a national of a designated enemy country (Germany);

2. That the property described as follows:

a. Five (5) State of San Paulo, Brazil, 15 Year, 8% Gold External Loan of 1921 bonds, of $1,000.00 face value each, bearing the numbers M1716, M4773, M6515, M8062, and M8999, presently in the custody of The First Boston Corporation, 100 Broadway, New York 5, New York, together with any and all rights thereunder and thereto, and

b. That certain debt or other obligation of The First Boston Corporation, 100 Broadway, New York 5, New York, representing cash and the proceeds of redemption of certain bonds, held by said The First Boston Corporation in a blocked account of the First National Bank of Boston, Buenos Aires, Argentina, in the names of Eugenio Stanger and/or Berta Stanger, together with any and all accruals thereto, and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on August 29, 1950.

For the Attorney General.

[SEAL] PAUL V. MYRON, *Deputy Director, Office of Alien Property.*

[F. R. Doc. 50-8435; Filed, Sept. 26, 1950; 8:49 a. m.]

[Vesting Order 15095]

JOSEPHUS ADOLPHUS MARIA BERGHAUS

In re: Securities and cash owned by Josephus Adolphus Maria Berghaus also known as Josef Adolf Berghaus and as Joseph A. Berghaus. F-28-30859.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Josephus Adolphus Maria Berghaus also known as Josef Adolf Berghaus and as Joseph A. Berghaus, whose last known address is 201 Kurfuerstendamm, Berlin-Charlottenburg, Germany, is a resident of Germany and a

national of a designated enemy country (Germany);

2. That the property described as follows:

a. Sixty five (65) shares of $10.00 par value common capital stock of the F. W. Woolworth Company, Woolworth Building, New York 7, New York, a corporation organized under the laws of the State of New York, being a part of the seventy five (75) shares evidenced by certificate numbered WT/F 657854, registered in the name of Slade and Co., presently on deposit with the American Express Company, Inc., 65 Broadway, New York 6, New York, in an account for the American Express Company, Inc., Zurich, together with all declared and unpaid dividends thereon, and

b. That certain debt or other obligation of The American Express Company, Inc., 65 Broadway, New York 6, New York, in the amount of $627.90, as of August 23, 1950, representing a portion of a credit balance in a General Ruling Number 6 account held for The American Express Co., Inc., Zurich, maintained at the aforesaid company, and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8436; Filed, Sept. 26, 1950; 8:49 a. m.]

[Vesting Order 15097]

KOHPCKE AND NEUMANN

In re: Debt owing to Kohpcke & Neumann, Inc. F-27-30808.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Ernest Fritz Neumann, whose last known address is Germany, is a resident of Germany and a national of a designated enemy country (Germany);

2. That Kohpcke & Neumann, Inc., the last known address of which is Panama City, Panama, is a corporation, partnership, association or other business organization, organized under the laws of Panama, which is, or since the effective date of Executive Order 8389, as amended, has been controlled by the aforesaid Ernest Fritz Neumann, and is a national of a designated enemy country (Germany);

3. That the property described as follows: That certain debt or other obligation owing to Kohcpke & Neumann, Inc. by The Panama Canal, Balboa Heights, Canal Zone, representing payment due under contracts for furnishing electrical refrigerators to units of The Panama Canal in 1941, together with any and all accruals to the aforesaid debt or other obligation and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, Kohpcke & Neumann, Inc., the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

4. That Kohpcke & Neumann, Inc. is controlled by or acting for or on behalf of a designated enemy country (Germany), or persons within such enemy country, and is a national of a designated enemy country (Germany).

5. That to the extent that the persons named in subparagraph 1 and 2 hereof are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8437; Filed Sept. 26, 1950; 8:49 a. m.]

[Vesting Order 15099]

TOKUJI MUKAI AND KIYO MUKAI

In Re: Bank account owned by Tokuji Mukai, also known as T. Mukai and Kiyo Mukai, also known as K. Mukai. F-39-6761-E-1.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Tokuji Mukai, also known as T. Mukai and Kiyo Mukai, also known as K. Mukai, each of whose last known address is Imazuno-Mura, Mitsuki-Gun, Hiroshima-Ken, Japan, are residents of Japan and nationals of a designated enemy country (Japan);

2. That the property described as follows: That certain debt or other obligation owing to Tokuji Mukai, also known as T. Mukai and Kiyo Mukai, also known as K. Mukai, by Sumitomo Bank of Seattle, Room 1210, 1411 Fourth Avenue Bank Building, Seattle 1, Washington, arising out of a Savings Account, account number 8745, entitled Tokuji Mukai-K. Mukai, maintained at the aforesaid bank, and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid nationals of a designated enemy country (Japan);

and it is hereby determined:

3. That to the extent that the persons named in subparagraph 1 hereof are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Japan).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest.

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8438; Filed, Sept. 26, 1950; 8:49 a. m.]

[Vesting Order 15092]

WILHELMINA ZEHNDER

In re: Estate of Wilhelmina Zehnder, deceased. File No. D-55-874; E. T. sec. 8687.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That the domiciliary personal representatives, heirs-at-law, next-of-kin, legatees and distributees, names unknown, of Karl Renz, also known as Carl Renz, deceased, who there is reasonable cause to believe are residents of Germany, are nationals of a designated enemy country (Germany);

2. That all right, title, interest and claim of any kind or character whatsoever of the persons identified in subparagraph 1 hereof, and each of them, in and to the estate of Wilhelmina Zehnder, deceased, is property payable or deliverable to, or claimed by, the aforesaid nationals of a designated enemy country (Germany);

3. That such property is in the process of administration by The Shelton Trust Company, as administrator c. t. a., acting under the judicial supervision of the Court of Probate, District of Shelton, State of Connecticut;

and it is hereby determined:

4. That to the extent that the domiciliary personal representatives, heirs-at-law, next-of-kin, legatees and distributees, names unknown, of Karl Renz, also known as Carl Renz, deceased, are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8397; Filed, Sept. 25, 1950; 8:50 a. m.]

[Vesting Order 15104]

STAHLUNION LTDA.

In re: Debts owing to Stahlunion Ltda. also known as Materials Ferroviarios e Construccoes. F-28-30875.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Vereinigte Stahlwerke A. G., the last known address of which is Dusseldorf, Germany, is a corporation, partnership, association or other business organization, organized under the laws of Germany, and which has or, since the effective date of Executive Order 8389, as amended, has had its principal place of business in Germany and is a national of a designated enemy country (Germany);

2. That Stahlunion Export, the last known address of which is Dusseldorf, Germany, is a corporation, partnership, association or other business organization, organized under the laws of Germany, and which has or, since the effective date of Executive Order 8389, as amended, has had its principal place of business in Germany and is a national of a designated enemy country (Germany);

3. That Stahlunion Ltda., also known as Materials Ferroviarios e Construccoes, is a limited society, organized under the laws of Brazil, whose principal places of business are located in Rio de Janeiro and Sao Paulo, Brazil, and is or, since the effective date of Executive Order 8389, as amended, has been controlled by or a substantial part of the stock of which is or has been owned or controlled, directly or indirectly, by the aforesaid Vereinigte Stahlwerke A. G. and Stahlunion Export, and is a national of a designated enemy country (Germany);

4. That the property described as follows: Those certain debts or other obligations of Steel Union Sheet Piling, Inc., % Office of Alien Property, 120 Broadway, New York City, arising out of accounts listed on the books of the aforesaid Steel Union Sheet Piling Inc. as indebtednesses to Material Ferroviarios (e Construccoes), Louis Horeyseck, Sao Paulo, Brazil, together with any and all accruals to the aforesaid debts or other obligations and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, Stahlunion Ltda., also known as Materials Ferroviarios e Construccoes, the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

5. That Stahlunion Ltda., also known as Materials Ferroviarios e Construccoes, is controlled by or acting for or on behalf of a designated enemy country (Germany) or persons within such country and is a national of a designated enemy country (Germany);

6. That to the extent that the persons named in subparagraphs 1, 2, and 3 hereof are not within a designated enemy country, the national interest of the United States requires that such persons be treated as nationals of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8401; Filed, Sept. 25, 1950; 8:50 a. m.]

[Vesting Order 15105]

CHARLOTTE TSAI-BARKOWSKI

In re: Debts owing to Charlotte Tsai-Barkowski. F-28-30894.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Charlotte Tsai-Barkowski, whose last known address is Tribergerstrasse 9, Berlin, Germany, is a resident of Germany and a national of a designated enemy country (Germany);

2. That the property described as follows:

a. That certain debt or other obligation of Swiss Bank Corporation, New York Agency, 15 Nassau Street, New York, New York, in the amount of $138.30 as of May 17, 1949, representing a portion of funds on deposit in a Ordinary Blocked Account entitled, "Swiss Bank Corporation, Zurich, Switzerland", maintained by the Swiss Bank Corporation, New York Agency, together with any and all accruals to the aforesaid debt or other obligation, and any and all rights to demand, enforce and collect the same,

b. That certain debt or other obligation of Swiss Bank Corporation, New York Agency, 15 Nassau Street, New York, New York, in the amount of $85.00 as of May 17, 1949, representing a portion of funds on deposit in a Special Blocked Account No. 60232 entitled "Swiss Bank Corporation, Zurich, Switzerland", maintained by the Swiss Bank Corporation, New York Agency, together with any and all accruals to the aforesaid debt or other obligation, and any and all rights to demand, enforce and collect the same, and

c. That certain debt or other obligation of Swiss Bank Corporation, New York Agency, 15 Nassau Street, New York, New York, in the amount of $2,270.00 as of May 17, 1949, representing a portion of funds on deposit in a Blocked Account No. 60232 General Ruling 17/6 entitled, "Swiss Bank Corporation, Zurich, Switzerland", maintained by the Swiss Bank Corporation, New York Agency, together with any and all accruals to the aforesaid debt or other obligation, and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, Charlotte Tsai-Barkowski, the aforesaid

national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described above, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 12, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8402; Filed, Sept. 25, 1950; 8:51 a. m.]

[Vesting Order 15108]

ANNA MEYER

In re: Real property owned by Anna Meyer.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Anna Meyer, whose last known address is Zittau, Saxony, Germany, is a resident of Germany and a national of a designated enemy country (Germany);

2. That the property described as follows: Real property situated in the City of Safety Harbor, County of Pinellas, State of Florida, particularly described as all of Lots Two (2) and Three (3) of Block Three (3), of C. W. Johnson's Green Spring Subdivision according to the map or plat thereof as the same appears of Record in Plat Book 3, Page 10, Public Records of Hillsborough County, Florida, together with all hereditaments, fixtures, improvements and appurtenances thereto, and any and all claims for rents, refunds, benefits or other payments, arising from the ownership of such property, is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, the aforesaid national of a designated enemy country (Germany);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Germany).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described in subparagraph 2 hereof, subject to recorded liens, encumbrances and other rights of record held by or for persons who are not nationals of designated enemy countries, to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 19, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8403; Filed, Sept. 25, 1950; 8:51 a. m.]

[Vesting Order 15109]

DR. SEIICHI OHATA

In re: Real property, property insurance policy and a bank account owned by Dr. Seiichi Ohata.

Under the authority of the Trading With the Enemy Act, as amended, Executive Order 9193, as amended, and Executive Order 9788, and pursuant to law, after investigation, it is hereby found:

1. That Dr. Seiichi Ohata, whose last known address is Japan, is a resident of Japan and a national of a designated enemy country (Japan);

2. That the property described as follows:

a. Real property situated in Lower Paia, Island and County of Maui, Territory of Hawaii, particularly described in Exhibit A, attached hereto and by reference made a part hereof, together with all hereditaments, fixtures, improvements and appurtenances thereto, and any and all claims for rents, refunds, benefits or other payments arising from the ownership of such property,

b. All right, title and interest of Dr. Seiichi Ohata in and to the fire insurance policy numbered 61061 in the amount of $6,000, issued by the Commonwealth Insurance Company of New York, 150 William Street, New York 8, New York, which policy expired March 13, 1950, and insured the improvements on the real property described in Exhibit A, attached hereto, together with any and all extensions and renewals thereof, and

c. That certain debt or other obligation of Bishop National Bank of Hawaii at Honolulu, King and Bishop Streets, Honolulu, T. H., arising out of a savings account, account number 23111, entitled Dr. S. Ohata, by Chiyoko Ohata, attorney-in-fact, maintained at the branch office of the aforesaid bank located at Kahului, Maui, T. H., and any and all rights to demand, enforce and collect the same,

is property within the United States owned or controlled by, payable or deliverable to, held on behalf of or on account of, or owing to, or which is evidence of ownership or control by, Dr. Seiichi Ohata, the aforesaid national of a designated enemy country (Japan);

and it is hereby determined:

3. That to the extent that the person named in subparagraph 1 hereof is not within a designated enemy country, the national interest of the United States requires that such person be treated as a national of a designated enemy country (Japan).

All determinations and all action required by law, including appropriate consultation and certification, having been made and taken, and, it being deemed necessary in the national interest,

There is hereby vested in the Attorney General of the United States the property described in subparagraph 2-a hereof, subject to recorded liens, encumbrances and other rights of record held by or for persons who are not nationals of designated enemy countries, and

There is hereby vested in the Attorney General of the United States the property described in subparagraphs 2-b and 2-c hereof,

All such property so vested to be held, used, administered, liquidated, sold or otherwise dealt with in the interest of and for the benefit of the United States.

The terms "national" and "designated enemy country" as used herein shall have the meanings prescribed in section 10 of Executive Order 9193, as amended.

Executed at Washington, D. C., on September 19, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

EXHIBIT A

All of that certain parcel of land situate, lying and being in Lower Paia, Island and County of Maui, being a Portion of Lot Number Three (3), Section Two (2), of the "Hamakuapoko Hui Lands", said parcel being bounded and described as follows:

Beginning at an iron pipe at the East corner of Lot of Satoki Ikeda, the coordinates of which are N. 592.3 feet and E. 973.7 feet from M. A. Co's Street Monument No. 8 and running by true azimuths:

227° 34', 10 feet along Haiku-Kahului road;

136° 57', 1,485 feet along County lot;

130° 31', 135.9 feet along lot of Joe Rocha and Sakuji Oda;

146° 42', 108.5 feet along Kaluna Estate Cemetery to pipe;

137° 41', 100.2 feet along Latter Day Saints Church and Raymond M. Kobayashi to Beach, thence along shore line to a point whose azimuth and distance are;

16° 38', 251.7 feet thence;

316° 51', 263.0 feet along land of Helen Mitchell;

229°19', 19.2 feet along land of Rachael T. Kiakona;

227° 34', 80.0 feet along land of Kamesuke Morihara;

317° 46', 100 feet along same;
227° 34', 34.6 feet along Haiku-Kahului road to iron pipe;
136° 57', 100 feet along land Satoki Ikeda;
227° 34', 70 feet along same;
316° 57', 100 feet along same to point of beginning.

[F. R. Doc. 50-8404; Filed, Sept. 25, 1950; 8:51 a. m.]

[Return Order 738]

PROF. DR. AUGUST CHWALA

Having considered the claim set forth below and having issued a determination allowing the claim, which is incorporated by reference herein and filed herewith,

It is ordered, That the claimed property, described below and in the determination, including all royalties accrued thereunder and all damages and profits recoverable for past infringement thereof, be returned after adequate provision for taxes and conservatory expenses:

Claimant, Claim No., Notice of Intention to Return Published, and Property

Prof. Dr. August Chwala, Vienna, Austria; Claim No. 41161; August 4, 1950 (15 F. R. 5036); property described in Vesting Order No. 68 (7 F. R. 6181, August 11, 1942), relating to United States Patent Application Serial No. 283,323 (now United States Letters Patent No. 2,356,565). This return shall not be deemed to include the rights of any licensees under the above patent application or patent.

Appropriate documents and papers effectuating this order will issue.

Executed at Washington, D. C., on September 20, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8439; Filed, Sept. 26, 1950; 8:49 a. m.]

[Return Order 749]

HERTA HOLLAND AND ANNA STEIN

Having considered the claim set forth below and having issued a determination allowing claim, which is incorporated by reference herein and filed herewith,

It is ordered, That the claimed property, described below and in the determination, be returned, subject to any increase or decrease resulting from the administration thereof prior to return, and after adequate provision for taxes and conservatory expenses:

Claimant, Claim No., Notice of Intention to Return Published, and Property

Herta Holland, nee Latz, and Anna Stein, nee Latz, London, England; Claims Nos. 10257 & 36328; August 18, 1950 (15 F. R. 5523); $1,784.63 in the Treasury of the United States, returnable to the claimants in equal shares.

Appropriate documents and papers effectuating this order will issue.

Executed at Washington, D. C., on September 21, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8441; Filed, Sept. 26, 1950; 8:50 a. m.]

MARIE JOSEPHINE SPIESSER AND AUGUST HOERDT

NOTICE OF INTENTION TO RETURN VESTED PROPERTY

Pursuant to section 32 (f) of the Trading With the Enemy Act, as amended, notice is hereby given of intention to return, on or after 30 days from the date of the publication hereof, the following property, subject to any increase or decrease resulting from the administration thereof prior to return, and after adequate provision for taxes and conservatory expenses:

Claimant, Property and Location

Marie Josephine Spiesser, Strasbourg, France, and August Hoerdt, Chicago, Ill., the latter acting for himself and as Conservator of the estate of Fred Hoerdt, an incompetent; Claim No. 42482; $1,200 in the Treasury of the United States and all interest of Sophie Brejcha in the trust estate created under the will of Leonhard Hoerdt, deceased. The trust is under the judicial supervision of the Probate Court of Cook County, Ill. Of the property 40% is returnable to Marie Josephine Spiesser, 30% to August Hoerdt, individually, and 30% to him as Conservator of the estate of Fred Hoerdt, an incompetent.

Executed at Washington, D. C., on September 20, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8442; Filed, Sept. 26, 1950; 8:50 a. m.]

IRMINGARD EMMA ANTONIA RICHTER CROMPTON

NOTICE OF INTENTION TO RETURN VESTED PROPERTY

Pursuant to section 32 (f) of the Trading With the Enemy Act, as amended, notice is hereby given of intention to return, on or after 30 days from the date of the publication hereof, the following property, subject to any increase or decrease resulting from the administration thereof prior to return, and after adequate provision for taxes and conservatory expenses:

Claimant, Property, and Location

Irmingard Emma Antonia Richter Crompton, London, England; Claim No. 41262; $6,704.65 in the Treasury of the United States.

Executed at Washington, D. C., on September 20, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8443; Filed, Sept. 26, 1950; 8:50 a. m.]

ALOISIA BRESKY AND JOSEFINE PUCHINGER

NOTICE OF INTENTION TO RETURN VESTED PROPERTY

Pursuant to section 32 (f) of the Trading With the Enemy Act, as amended, notice is hereby given of intention to return, on or after 30 days from the date of the publication hereof, the following property, subject to any increase or decrease resulting from the administration thereof prior to return, and after adequate provision for taxes and conservatory expenses:

Claimant, Property, and Location

Aloisia Bresky and Josefine Puchinger, both of Vienna, Austria; Claims Nos. 40911 and 40912; $2,129.72 cash in the Treasury of the United States; $1,419.81 returnable to Aloisia Bresky; $709.91 returnable to Josefine Puchinger. All right, title, interest and claim of Aloisia Bresky and Josefine Puchinger in and to the estate of Joseph Helus, deceased.

Executed at Washington, D. C., on September 20, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8444; Filed, Sept. 26, 1950; 8:50 a. m.]

MARIA ANNA RIEGLER

NOTICE OF INTENTION TO RETURN VESTED PROPERTY

Pursuant to section 32 (f) of the Trading With the Enemy Act, as amended, notice is hereby given of intention of return, on or after 30 days from the date of the publication hereof, the following property, subject to any increase or decrease resulting from the administration thereof prior to return, and after adequate provision for taxes and conservatory expenses:

Claimant, Property and Location

Maria Anna Riegler, Vienna, Austria; Claim No. 39914; $990.51 cash in the Treasury of the United States.

Executed at Washington, D. C., on September 20, 1950.

For the Attorney General.

[SEAL] HAROLD I. BAYNTON,
Assistant Attorney General,
Director, Office of Alien Property.

[F. R. Doc. 50-8445; Filed, Sept. 26, 1950; 8:50 a. m.]